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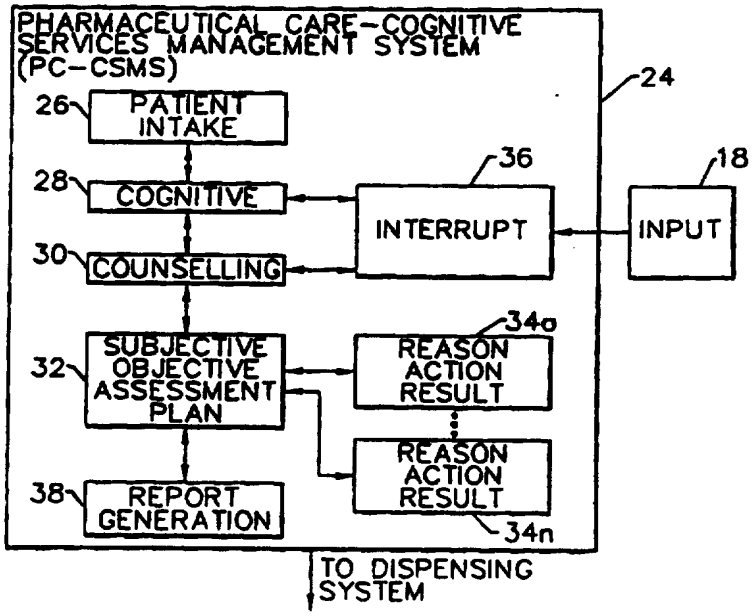
(54) Title: FLEXIBLE COMPUTER BASED PHARMACEUTICAL CARE COGNITIVE SERVICES MANAGEMENT SYSTEM AND METHOD

(57) Abstract

A computerized pharmaceutical care cognitive services management system and method (PC-CSMS) (24) allows the transformation of a pharmacist from a vendor to a health care provider. The PC-CSMS (24) captures all of the value added by a pharmacist to a patient encounter and permits the association of multiple RARs (Reason, Action, Result) (34) with a single SOAP (Subjective Information, Objective Information, Assessment, Plan) (32). The PC-CSMS (24) enables the pharmacist to be compensated for each analytical or counseling session (30) and/or service provided to the user associated with a single transaction. The PC-CSMS (24) also enables efficient processing of interruptions (36) to cognitive (28) and counseling (30) sessions. Upon reception of an interrupt (36) from a person or a telephone, the PC-CSMS (24) suspends the cognitive (28) or counseling (30) session for a first patient, processes the interrupt for the second patient and then resumes processing for the first patient.



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FLEXIBLE COMPUTER BASED PHARMACEUTICAL CARE COGNITIVE SERVICES MANAGEMENT SYSTEM AND METHOD

Field of the Invention

This invention relates to systems and methods used by pharmacists, and more particularly to computer based pharmaceutical care cognitive services management systems which allow a pharmacist to more efficiently conduct an encounter with pharmacy patients.

Background of the Invention

The role of pharmacists is quickly moving from that of a vendor to that of a health care provider. As a result, pharmacists are increasingly concerned about advising patients regarding the selection, use and side effects of over-the-counter and prescription drugs. A pharmacist typically obtains information relating to the patient's history directly from the patient, accepts orders for over-the-counter and prescription drugs, conducts an analysis in terms of a cognitive review of the drug and the patient's history, and conducts a counseling session with the patient during which the pharmacist advises the patient about substitute generic drugs, provides instructions for administering the drug, and advises the patient about possible side effects resulting from use of the drug. Thereafter, the pharmacy dispenses the prescribed drug or an equivalent generic drug.

Recently, computer based systems have been introduced to automate this process. Pharmaceutical care systems, typically controlled by a microprocessor, assist a pharmacist in analyzing the impact of drugs with respect to particular patients and to correspondingly provide advice to particular patients based on particular over-the-counter or prescription drugs and specific patient histories. The computer based systems may include a processing unit, a keyboard, a display screen and a printer. These systems assist in the collecting (i.e., intake) of patient history information, conducting of a cognitive analysis, counseling of patients, and dispensing over-the-counter and prescription drugs.

One example of a computer based system used by pharmacists is the PharmCare™ system marketed by Pharmaceutical Care Services, Inc. of Waco, Texas. PharmCare™ provides a sequential workflow and is written in

a high level computer language such as Cobol. The PharmCare™ system assists the user with collecting patient information, conducting of cognitive and counseling sessions, and correlating the results of the cognitive and counseling sessions. During cognitive analysis, the PharmCare™ system conducts an automated drug utilization review ("DUR") (also sometimes referred to as drug regimen review ("DRR")) during which an interactive check is made between the over-the-counter or prescribed drug and allergies, pregnancy status, age, and other characteristics and conditions of the patient.

During the cognitive phase of the PharmCare™ system, and in particular, during DUR, a pharmacist can create a "SOAP." "SOAP" stands for "Subjective" data, "Objective" data, "Assessment" of data, and "Plan." The subjective data generally refers to any data received that is opinion based while the objective data refers to any data received that is factual based. During the assessment phase, the pharmacist conducts an analysis of the solutions after collecting the data and running the drug review. During planning, the pharmacist determines the action to be taken based on the results of the assessment.

Specifically, the subjective data includes diagnoses, allergies, adverse drug reactions, lifestyle information, problems in general or with drugs, drugs not purchased at the particular pharmacy, over-the-counter drugs presently being taken by the patient, the patient's physicians, the patient's symptoms, and socio-economic considerations. The objective data is a profile of the patient's drug history, and includes data relating to interactions between drugs, interactions between drugs and diseases, interactions between drugs and food, as well as the age and weight of the patient. Additional miscellaneous data is also considered during the SOAP analysis for consistency purposes. The miscellaneous data includes refill frequency dates, nature of over-the-counter drug use, a patient's understanding of particular situations and target goals of the therapy, and a pharmacist's observation of the results of the consultation session with the patient.

During assessment, the pharmacist determines if each of the subjective and objective data are in order and if any problem exists or potential problem exists as a result of the subjective and objective data. For example, a drug incompatibility may exist or the drug prescribed for the

patient may be inconsistent with the patient's lifestyle. Finally, during planning, the pharmacist identifies an action to remove any potential or existing negative results of the drug use, sets target goals, if necessary, and follows up on any previous progress notes.

The PharmCare™ system also provides for creation of a RAR (i.e., "Reason," "Action" and "Result"). During a RAR, the pharmacist documents the actual action taken as a result of the interaction between the pharmacist and the patient in order to justify billing the patient or third party payer for the consultation session with the patient. In general, SOAP refers to the clinical portion of the analysis and RAR refers to the billing or financial portion resulting from the analysis. The PharmCare™ system allows the user to associate one RAR with one SOAP.

Unfortunately, the prior art systems do not provide the flexibility necessary in order to fully transform the role of a pharmacist from a drug vendor or dispenser to a health care provider, allowing the pharmacist to recapture the value added by the pharmacist during encounters with patients. For example, the pharmacist may not be able to recapture all of the value added by the pharmacist during the encounter with the patient and subsequently bill the patient or third party payer for the total value added by the pharmacist.

In addition, it is not uncommon for the pharmacist to be interrupted while performing tasks. Prior art systems are indexed, sequential database systems which may require the system to discontinue any analysis being conducted when the interruption is received.

Summary of the Invention

It is, therefore, an object of the present invention to provide a flexible computer based pharmaceutical care cognitive services management system.

It is another object of the present invention to provide a computer based pharmaceutical care cognitive services management system for capturing all of the value added by a pharmacist to a patient encounter.

These and other objects are provided according to the present invention by a computer based pharmaceutical care cognitive services management system which executes on a computer system. The computer system includes a processor, a data storage device, a display device and an

input device. The computer based pharmaceutical care cognitive services management system compromises a number of subsystems including a patient intake subsystem which includes a patient chart component and a cognitive service record component, a cognitive subsystem, a counseling subsystem, a report generation subsystem, a SOAP (Subjective, Objective, Assessment, Plan) and RAR (Reason, Action, Result) subsystem and an interrupt subsystem.

It is not uncommon for a pharmacist to provide multiple analyses during a single patient encounter and thus add significant value to the encounter with the patient. The present invention allows the pharmacist to recapture the significant value added to the encounter with the patient for each analysis performed by the pharmacist. In particular, the present invention allows a pharmacist to associate multiple billing sessions, i.e., multiple RARs, with one SOAP.

In addition, a pharmacist is often interrupted during a cognitive or counseling session involving a particular patient. Interruptions may include a second patient calling to ask the pharmacist questions about a particular prescription or personally visiting the pharmacist, as well as telephone requests to refill particular prescriptions. The present invention does not require the pharmacist to terminate any cognitive or counseling session being conducted to handle any interruptions and restart the terminated cognitive or counseling session from the beginning after processing of the interruptions. Rather, the pharmaceutical care cognitive services management system and method suspends the interrupted cognitive or counseling session, completes the processing of the interrupt by a patient or a request for a prescription refill, and restarts the suspended cognitive or counseling session from the point of suspension rather than from the beginning. The restart of the suspended session may be automatic or may be enabled by the user.

In particular, the computer based pharmaceutical care cognitive services management system and method prompts the user on the display device to enter identity and history information corresponding to a particular patient using the input device, and stores the identity and history information corresponding to the patient and entered by the user in the data storage device. The pharmaceutical care cognitive services management system also prompts the user on the display device for entry of subjective

information relating to assessed characteristics of the patient and objective information relating to the patient's drug use history, and stores the subjective and objective information entered by the user in the data storage device. The user is also prompted on the display device to enter an assessment of the patient, and also is prompted to enter a plan to follow based on the assessment. The assessment and the plan entered by the user are also stored in the storage device.

The pharmaceutical care cognitive services management system prompts the user on the display device to enter a first reason for the assessment and the plan, a first action in response to the assessment and the plan, and a first result based on the first action. In addition, the pharmaceutical care cognitive services management system prompts the user to enter a second reason for the assessment and the plan, a second action in response to the assessment and the plan, and a second result based on the second action. The first reason, the first action and the first result as well as the second reason, the second action and the second result are stored in the data storage device. Finally, the pharmaceutical care cognitive services management system associates the first reason, the first action and the first result and the second reason, the second action and the second result with the subjective and objective information, the assessment and the plan for the particular patient. As a result, a multiple number of reasons, actions and results are associated with a single stored set of subjective information, objective information, assessment and plan for one patient.

The pharmaceutical care cognitive services management system also generates a first billing statement for the patient based on the first reason, first action and first result as well as a second billing statement for the patient based on the second reason, second action and second result. Thus, the pharmaceutical care cognitive services management system generates two billing statements for one patient based on the one set of subjective information, objective information, assessment and plan allowing the pharmacist to recapture all of the value added by the pharmacist during the encounter with the patient.

The pharmaceutical care cognitive services management system also prompts the user on the display device to enter a prescription using the input device, and stores the prescription entered by the user in the data storage

device. The prescription is associated with the patient identity stored in the data storage device, and is compared with the identity and history information corresponding to the patient to produce an indication of possible incompatibilities between the prescription and the patient. The user is also prompted on the display device to enter any changes or alterations to the prescription based on the indications of the possible incompatibilities between the drug and the patient resulting from the comparison between the two. If the user invokes an interrupt during the comparison of the prescription and the patient, or while the prescription is being changed or altered based on any indications of possible incompatibilities between the prescription and the patient, the pharmaceutical care cognitive services management system suspends any prompting of the user to change or alter the prescription and displays information to the user on the display device relating to a second patient. Once processing of the second patient is completed, prompting of the user to change or alter the prescription for the first patient is resumed at the point of suspension.

The user is also prompted on the display device to enter results of a counseling session between the pharmacist and the patient. This process of prompting the user for entry of results of the counseling session is suspended in response to a user interrupt and information concerning a third patient is displayed on the display device. Upon completion of the processing of the third patient, the pharmaceutical care cognitive services management system resumes prompting of the user for entry of the results of the counseling session with the first patient at the point of suspension of the prompting process. These user interrupts may range from merely viewing information relating to the second patient to processing a request by a second patient or a physician to refill a prescription or to fill a new prescription.

In the preferred embodiment, the user may interrupt processing by any of the patient intake, cognitive, counseling, SOAP and RAR or report generation subsystems. In addition, the user may cause the pharmaceutical care cognitive services management system to transfer control from any one subsystem to any other subsystem during use.

Brief Description of the Drawings

A preferred form of the invention is illustrated in the accompanying drawings, in which:

FIG. 1 is a high level block diagram of the computer based pharmaceutical care cognitive services management system;

FIG. 2 is a block diagram of the pharmaceutical care cognitive services management system referred to in FIG. 1;

FIG. 3 is a flowchart illustrating the operational control of the pharmaceutical care cognitive services management system illustrated in FIG. 2;

FIGS. 4A through 4C are conceptual data models for the present invention;

FIGS. 4D through 4H are physical data models for the present invention;

FIGS. 5A through 5RR illustrate display screens which are presented to a user and demonstrate the operational logic of the present invention;

FIG. 6 is a flowchart illustrating the operational control of the patient and refill interrupts; and

FIG. 7 is a flowchart illustrating the operational control of the operation of processing a single SOAP and multiple RARs associated therewith.

Description of the Preferred Embodiment

The present invention now will be described more fully hereinafter with reference to the accompanying drawings, in which a preferred embodiment of the invention is shown. This invention may, however, be embodied in many different forms and should not be construed as limited to the embodiment set forth herein; rather, this embodiment is provided so that this disclosure will be thorough and complete, and will fully convey the scope of the invention to those skilled in the art. Like numbers refer to like elements throughout.

Overview: Computer Based Pharmaceutical Care Cognitive Services Management System

Referring to Figure 1, a general overview of a computer based pharmaceutical care cognitive services management system **10** will be

described. The system **10** includes a computer system **12** having processor means **14** and pharmaceutical care cognitive services management system ("PC-CSMS") **24**. The computer system is connected to data storage means **16**. In addition, the computer system **12** is also connected to several input/output peripheral devices including input means **18**, display means **20**, and printing means **22**. Input means **18** may consist of a keyboard, a mouse, a virtual track ball, a light pen, or any other number of devices, individually or collectively used for entering data or selecting options in computing environments. Display means **20** may be a color cathode ray tube, or any other type of display device. Finally, printing means **22** may be a laser printer, or any other type of printing device and may be used for printing patient reports and billing statements.

Preferably, processor means **14** is a personal computer. Data storage means **16** may include hard disk drives, tapes, etc. or any combination thereof. Processor **14** communicates with input device **18**, display device **20**, printing device **22** and data storage device **16**. The computer system also contains pharmaceutical care cognitive services management system or PC-CSMS **24**. PC-CSMS **24** communicates with processor **14**. PC-CSMS **24** is preferably implemented as a stored program which executes on processor **14**.

Referring to Figure 2, a block diagram of pharmaceutical care cognitive services management system or PC-CSMS **24** will now be described. PC-CSMS **24** contains subsystems for patient intake **26**, cognitive **28**, counseling **30**, and SOAP **32** (also referred to as Subjective, Objective, Assessment and Plan). The PC-CSMS according to the present invention also provides multiple RAR subsystems **34** (also known as Reason, Action and Result), an interrupt subsystem **36** and a report generation subsystem **38**. The PC-CSMS may be operationally connected to a dispensing system (not shown) for dispensing drugs for a particular patient after conclusion of management of the pharmaceutical process by a pharmacist or user of PC-CSMS **24**.

The components of PC-CSMS **24** will now be described generally. A detailed description of these components will be described below in the sections labeled "Detailed Operation." Patient intake subsystem **26** consists of two components (i.e., patient chart and cognitive service record). The patient chart component prompts a user of PC-CSMS **24** to enter via input

device **18**, and then stores in data storage device **16**, information regarding a patient's identity and history including general information relating to name, residence and demographics, insurance, medical and miscellaneous information. The patient chart component is only implemented for new patients and updating of information for existing patients. The cognitive service record component displays information on display device **20**, and prompts a user on the display device to enter, via input device **18**, and then stores in data storage device **16**, information relating to drug requests permitting a user of PC-CSMS **24** to view and survey work to be done for a patient, additional personal information about a patient specific to the present encounter between the patient and the user of PC-CSMS **24**, and a summary of information already known about the patient. The patient chart and cognitive service record components may be used by a technician in addition to being used by a pharmacist.

Cognitive subsystem **28** is implemented by PC-CSMS **24** to perform a drug regimen review. During implementation of cognitive subsystem **28**, which may be only invoked by a pharmacist, PC-CSMS **24** displays a summary of patient information regarding a particular encounter between a pharmacist and a patient on display device **20**, and prompts the user for assignment of patient categories and modules with respect to the patient and the prescribed or over-the-counter drugs. Cognitive subsystem **28** also manages the therapy review of the interactions between the patient and the prescribed or over-the-counter drug and permits the user (i.e., pharmacist) to select alternative medications via input device **18** if problems occur based on the interactions between the drug and the patient. Cognitive subsystem **28** also displays a summary of information known about the patient on display device **20** for easy reference. The patient need not be present during execution of the cognitive subsystem **28**.

Counseling subsystem **30** of PC-CSMS **24** brings together the patient, the pharmacist and the drug. During counseling, the patient is physically present with the user of the pharmaceutical care cognitive services management system. Counseling subsystem **30** controls a therapy management session to ensure the patient understands what drug he is getting, the purpose of the drug and the effects of the drug. Counseling subsystem **30** also controls the standard of care by prompting the user on display device **20** to indicate that the various steps in the counseling

session have been completed. Further, counseling subsystem **30** also manages the encounter between the patient and the user by reminding the user of modules and SOAPs not completed. Finally, similar to patient intake subsystem **26** and cognitive subsystem **28**, counseling subsystem **30** also displays a summary of patient information on display device **20** for ease of reference by the user of PC-CSMS **24**.

Report generation subsystem **38** initiates the generation of reports regarding encounters between patients and users of PC-CSMS **24** as well as billing statements and other information and financial reports. Similarly, PC-CSMS **24** may be operationally connected to a dispensing system (not shown) for dispensing the drug prescribed for the patient or the drug alternatively selected by the user of the pharmaceutical care cognitive services management system **24** after completion of counseling subsystem **30**. A number of dispensing systems are presently available including RxExpress marketed by ComCoTech of Chicago, Illinois.

Still referring to Figure 2, SOAP subsystem **32** of PC-CSMS **24** enables the user of PC-CSMS **24** to document the encounter with the patient from a medical perspective. SOAP subsystem **32** controls the collection of subjective or opinion based information relating to the patient, objective or factual based information relating to the patient, entry and storage of an assessment of the relationship between the subjective information and the objective or factual based information, and entry and storage of a plan to be followed which is based on the assessment.

RAR subsystems **34a** through **34n** controls the documentation by the user of the reason for the assessment and plan of SOAP subsystem **32**, the action taken by the user due to the assessment and plan of SOAP subsystem **32**, and the result of the action corresponding to the assessment and plan of SOAP subsystem **32**. RAR subsystem **34** allows the pharmacist to recapture the value added by his encounter with the patient controlled by SOAP subsystem **32**. Multiple RARs **34a** through **34n** can be associated with a single SOAP. Association of multiple RARs **34a** through **34n** with a single SOAP permits the user of PC-CSMS **24** to recapture all of the value added by the user during the encounter with the patient and subsequently generate multiple reports and/or billing statements corresponding to the single encounter with the patient. Multiple RARs can be listed individually as separate entries (i.e., one per line) on a single billing statement. Thus,

multiple RARs associated with a single SOAP allow the user of PC-CSMS **24** to capture the total value added by the user during the encounter with the patient. The number of RARs which can be associated with a single SOAP is essentially unlimited, but in the present embodiment is limited to four.

Interrupt subsystem **36** which is invoked externally by the user of PC-CSMS **24** permits the user of PC-CSMS **24** to suspend processing by cognitive subsystem **28** or counseling subsystem **30**. The user of PC-CSMS **24** invokes interrupt subsystem **36** via input device **18** upon receiving a telephone call from a patient or a patient interrupting the user in person. Interrupt subsystem **36** controls the review, updating or creation of patient records stored in data storage device **16** as well as processing of requests for refilling a prescription. Upon completion of the review, update or creation of the patient record or entry of the request for refilling of a prescription for a drug, processing of the suspended cognitive or counseling session is resumed and continues until completed.

Pharmaceutical care cognitive services management system **24** also permits a user to tag a note to a particular patient or encounter or to simply remind a user of some task to be completed at a later date. Still further, PC-CSMS **24** also interfaces with one or more drug databases. Moreover, PC-CSMS **24** permits a user to communicate with other users via electronic mail, to access an on-line scheduler or calendar and to access on-line assistance or help.

Finally, since PC-CSMS **24** is implemented in a Windows™ environment, it has a number of common pull-down menus including "File," "Edit," "Views," "Action," "Reports," "Utilities," and "Help."

Referring to Figure 3, a high level control flowchart of PC-CSMS **24** will now be described. The flowchart in Figure 3 provides the flow control resulting from use of PC-CSMS **24**. It will be understood by those having skill in the art that flowcharts may be implemented by computer system **12**. PC-CSMS **24** is event controlled, and thus, processing can begin at essentially any of patient intake subsystem **26**, cognitive subsystem **28**, counseling subsystem **30**, SOAP subsystem **32**, RAR subsystem **34** or report generation subsystem **38**. The following description, however, assumes that processing is begun with patient intake subsystem **26**.

A determination is made at **50** whether a new patient is to be processed or a patient record is to be updated. If a new patient is to be

entered into PC-CSMS **24** or a patient record is to be updated, patient intake subsystem is invoked at **52** and the new patient information or the updated patient information is collected and stored, i.e., the records are either generated or updated in data storage device **16**. If neither a new patient is to be added to PC-CSMS **24** or a patient record is to be updated, a determination is made at **54** as to whether the user is initiating the cognitive subsystem. If the user is initiating the cognitive subsystem, PC-CSMS **24** then proceeds with controlling the cognitive subsystem at **56** by prompting, receiving input, storing the input and displaying encounter review information, standard of care information, therapy review information and patient summary information. If it is determined at **54** that the cognitive subsystem was not invoked by the user, a determination is made at **58** as to whether the counseling subsystem was invoked by the user. If the counseling subsystem was invoked by the user, PC-CSMS **24** then controls the counseling subsystem at **59**. As a result, PC-CSMS **24** controls the counseling session by interactively prompting for user entry of information, receiving information entered by the user, storing this information and displaying information to enable therapy management, standard of care, encounter management, and patient summary processes to be performed.

If it is determined at **58** that a counseling session was not initiated by the user, a determination is made at **60** as to whether the user has decided to create or update a SOAP (i.e., Subjective, Objective, Assessment and Plan). If it is determined at **60** that the user has initiated a request to create or update a SOAP, PC-CSMS **24** then controls the creation or updating of the SOAP at **62**. As a result, PC-CSMS **24** prompts for, receives and stores subjective and objective information relating to the patient and a particular drug, an assessment of the relationship between the subjective and objective information, and a plan to be followed as a result of the generated assessment. Once the SOAP subsystem is completed at **62**, a determination is made at **64** as to whether the user requested the creation or update of a RAR (i.e., Reason, Action, Result). If the user requested creation or update of a RAR, PC-CSMS **24** controls the creation or updating of a RAR at **66** by prompting the user and receiving information from the user relating to the reason for the SOAP, an action taken by the user based on the SOAP, and the result of the action. Once the RAR is completed, a determination is made as to whether the user desires to create or update a

second RAR associated with the same SOAP. If so, PC-CSMS **24** creates a second SOAP at **66** associated with the same SOAP as the previously created RAR. Thus, the user may create multiple RARs associated with a single SOAP.

If either a determination is made at **60** that a SOAP is not to be created or at **64** that a RAR is not to be created, PC-CSMS **24** makes a determination at **68** as to whether a report is to be generated. If a determination is made at **68** that a report is to be generated, PC-CSMS **24** generates the report at **70**. If a report is not to be generated or a report is generated and processing of the report is complete, control is returned to block **50** to determine which of the processes of the pharmaceutical care cognitive services management system **24** are to be invoked. Since PC-CSMS **24** is an event implemented system, it will be understood by those having skill in the art that control can be transferred to any one of the patient intake subsystem **26**, cognitive subsystem **28**, counseling subsystem **30**, SOAP subsystem **32**, or report generation subsystem **38** at any point.

Finally, it will also be understood by those skilled in the art that the interrupt subsystem **36** (see Figure 2) can be implemented at any point during processing by the cognitive subsystem **28** or the counseling subsystem **30**.

Conceptual and Physical Data Models

Referring to Figures 4A-4H, the design for the data flow and relationships in the pharmaceutical care cognitive services management system will be described. In particular, conceptual data models for PC-CSMS **24** are illustrated in Figures 4A-4C and physical data models for PC-CSMS **24** are illustrated in Figures 4D-4H. The conceptual data models illustrated in Figures 4A-4C illustrate the entities, attributes, data items, relationships, inheritances and domains according to the pharmaceutical care cognitive services management system. The physical data models illustrated in Figures 4D-4H specify the physical implementation of the database, including tables, columns (primary and foreign keys), indexes, references and referential integrity of the pharmaceutical care cognitive services management system. The graphical technique used to illustrate the design for the conceptual data model and the physical data model will be understood by those skilled in the art. The graphical technique may be

implemented using a design tool referred to as "S-Designor Corporate" which is available from SDP Technologies, Inc. of Westchester, Illinois. The graphical technique for understanding the conceptual data models and physical data models is described in detail in the publicly available Corporate User's Guide, SDP Technologies, Inc., 1993, Part 1, pages 11-33, the disclosure of which is hereby incorporated herein by reference.

Detailed Operation of Pharmaceutical Care Cognitive Services Management System

The sequence of operations performed by the pharmaceutical care cognitive services management system will now be described in detail with reference to screen interfaces illustrated in Figures 5A-5RR. In addition, the flowcharts in Figures 6 and 7 provide the flow control resulting from implementation of multiple RARs associated with a single SOAP and the patient and refill interrupt subsystems, respectively. It will be understood by those having skill in the art that the screen interfaces of Figures 5A-5RR illustrate the operational control flow of the PC-CSMS **24** which is implemented using event programming techniques rather than sequential programming. It will also be understood by those having skill in the art that the operational flow defined by the screen interfaces and their sequence, may be implemented by computer system **12**, operating under stored program control. The displays illustrated in Figures 5A-5RR are examples of displays which appear on display device **20** at various times during use of the PC-CSMS **24**. Selection of options displayed on display device **20** may be made by a user using any input device including a keyboard, a mouse, a virtual track ball, a light pen or even a touch screen interface, individually or collectively. The system responds according to the selection made by the user.

Generally, during use of PC-CSMS **24**, a user can implement any of the subsystems from any point. For example, while in the patient intake subsystem (i.e., patient chart or cognitive service record), a user may decide to terminate processing by the patient intake subsystem and begin processing by the cognitive subsystem or counseling subsystem. Operational flow of the pharmaceutical care cognitive services management system will now be described with reference to Figure 5A-5RR.

Detailed Operation: Work Order Subsystem

Referring to Figure 5A, the list of work orders to be processed by the user or pharmacist is displayed. The list of work orders, which is always the first screen interface to be displayed to the user, may be accessed at any point during use of PC-CSMS by selecting the "WO" key or button **101** on the display screen. "Keys" may also be referred to as "buttons." The list of work orders displays all active orders in the system. A variety of information is displayed with respect to each patient including the status of the prescription (e.g., waiting, pick up or delivery), the name of the patient, the status of the processing of the drug order (e.g., in process ("IP") or suspended ("S")), the step of the pharmacy management or health care being provided (e.g., "Cognitive," "Counseling" or "Reporting"), and the category of the patient (e.g.,"Low" which means a basically healthy person, "High" which means a patient has some problems which may be chronic, or "Special" which refers to anything that the user wants to specifically note). Additional information is also displayed with respect to each patient in the list of work orders including the number of prescriptions to be filled, how many, if any, of the prescriptions to be filled are new prescriptions, what type of patient requests are to be performed, the number of modules and module steps to be performed, and the cognitive service record number of the current patient encounter.

Still further, different views may be displayed of the work order. Options for displaying different views of the work order are displayed at **121** which permit the user to display all orders, orders being dispensed, orders presently being processed by the cognitive subsystem, or orders which require processing by the counseling subsystem. Finally, the user can find a patient quickly by entering a user's name in the "Find Patient" field and the PC-CSMS will locate the patient in the list of the patients presently being viewed, highlight the patient located in the list of patients, and provide additional personal information relating to the patient at **122**.

As previously mentioned, after the work order is viewed and a patient is selected, the user may move to any of the other subsystems of PC-CSMS by selecting any of the other keys or buttons on the display screen, including the patient chart ("PC") at **102**, cognitive service record ("CSR") at **103**, cognitive subsystem ("COG") at **104**, counseling subsystem ("COU") at **105**, patient interrupt subsystem ("Pt.") at **106**, refill interrupt subsystem ("Refill")

at **107**, SOAP subsystem at **108**, Note subsystem at **109** or Mono (i.e., Drug Monograph) subsystem at **110**. The user may also use electronic mail by selecting the "Mail" key or button at **111**, use the scheduler by selecting the "Sched" key or button at **112** or use on-line assistance by selecting the "Help" key or button at **113**.

Detailed Operation: Patient Intake Subsystem

The detailed operation of the patient intake subsystem will now be described. The patient intake subsystem includes two components, i.e., patient chart and cognitive service record. The patient chart component is generally only accessed by the user if a new patient is to be processed, and thus patient identification and history information must be entered into PC-CSMS, or if the patient identification and history information relating to a particular patient requires updating.

Referring to Figures 5B-5G, the patient chart component includes six "tabs" (at **125**, generally) or parts relating to general patient identification information, insurance, medical history, miscellaneous, drug profile information, and CSR (i.e., Cognitive Service Record) history information. The user may move between any "tab" or part by "clicking" on the desired tab or using any other input device for selecting options. While in the general mode for patient chart as illustrated in Figure 5B, the user is prompted on display device **20** to enter general information relating to the new patient including name, social security number, address, telephone numbers, demographics, the preferred language of the patient, an assigned patient identification number and so forth. The information is entered at input device **18** by the user. In some cases, PC-CSMS **24** provides the user with a list of information from which to choose or select data by selecting the "_" key adjacent to the particular category. For example, "_" at **130** adjacent to the "Race" field will display a list of different races from which the user can select. Similar "_" keys are adjacent to the "Gender" field as well as the "Preferred Language" field indicating that the user can select the gender and preferred language from a predefined list.

Referring to Figure 5C, the user is prompted to enter information relating to the patient's insurance by displaying a screen similar to that illustrated in Figure 5C on display device **20**. As will be understood by those skilled in the art, a payer and information related to a patient's

insurance for the particular payer, can be added by selecting "Add" key or button **141** to add a payer to the list of patient payers. Information which may now be entered by the user at input device **18** relating to the patient's insurance for the particular payer includes the patient's relationship to the card holder, identification of the card holder, the patient's insurance number, plan, group, and eligibility details relating to family, individual and policy effective date. The user may find the card holder by selecting "Find" key or button **140** which allows the user to find the particular card holder by displaying the current card holders for this particular payer. In addition, any payer and related patient insurance information for the particular payer may be removed by highlighting the particular payer in the list of patient payers and selecting "Remove" key or button **142**.

The user is also prompted during patient chart to collect or update information relating to the medical history of the patient by displaying a screen similar to that illustrated in Figure 5D. Any number of different characteristics may be displayed and collected relating to a patient. For example, information relating to drug allergies, skin rash, difficulty breathing, stomach irritation, shock, anemia, medical conditions, blood type or impairments may be noted. In addition, the patient's physician or prescriber may be listed and names of physicians or prescribers may be added to or deleted from the "prescriber" list using "Add" key **145** or "Remove" key **146**, respectively. As indicated by the "_" and "_" keys, the drug allergies and the medical conditions may be selected by scrolling a predefined list scrolled to locate an allergy or condition located in the list.

PC-CSMS **24** also prompts the user to enter or update miscellaneous information with respect to the patient. This is accomplished by displaying a screen similar to that illustrated in Figure 5E on display device **20** for the "Misc." tab at **125**, generally, permitting the user to enter the various miscellaneous information or select the information from a predefined list. For example, miscellaneous information may include child resistant packaging, generic drugs, size of the label for ease of reading, medication selection priority, preferred therapy, pharmacist observations regarding characteristics of the patient, alcohol use, tobacco use and whether corrective lenses are used. Information relating to alcohol use and tobacco use may be selected from predefined lists as indicated by the "_" keys.

Referring to Figure 5F, patient chart also displays information to the user on display device **20** relating to the patient's prescription profile ("Rx Profile"). The information displayed to the user may include the date of a prescription, the prescription number, the name of the drug, the quantity of units of the drug, the number of refills permitted, the identification of the prescriber, and various other information relating to the profile of a particular prescription.

Finally, a patient chart also displays the cognitive service record history of the patient ("CSR History") by displaying a screen similar to that illustrated in Figure 5G. The information displayed to the user permits the user to enter via display device 20 the date a cognitive service record was created, and allows the user to enter or view different sections of cognitive services records including information relating to the patient's health, summary of drug use, interventions, requests and screenings.

The second component of the patient intake subsystem is cognitive service record ("CSR"). Cognitive service record may be invoked by selecting "CSR" key or button **103**. Referring to Figures 5H-5J, processing of the cognitive service record component will be described. Cognitive service records, as indicated by the tabs "Requests," "Encounter Info" and "Pt. Summary" at **181**, generally, permit handling of requests, collection of encounter information and displaying of a summary of information relating to the patient. During requests, the user can view and survey the work to be performed with respect to a particular patient. For example, the delivery status of a drug is displayed in Figure 5H in terms of whether the patient is waiting for the drug, the patient is going to pick up the filled prescription, or the filled prescription is to be delivered to the patient. In addition, information relating to current prescriptions is listed, and the user may add a prescription by selecting "New Rx" key **182**, may edit a current prescription by selecting "Edit" key **183**, or remove a current prescription by selecting "Remove" key **184**. A list of previous prescriptions is also displayed to the user and the user may search this list for a particular drug by name or prescription number. In addition, the user may refill a prescription by highlighting the prescription to be refilled in the list of previous prescriptions and selecting "Refill" key **185**. During processing of requests, the user can also enter over-the-counter consultation requests and extended consultation

requests. Finally, the user may also enter screening requests by the patient which can be selected by the user from a predefined list.

Upon completing processing of the request portion of the cognitive service record component of the patient subsystem, the user may select encounter information processing by "clicking" on the "Encounter Info" tab at **181**, generally. It will be understood by those having skill in the art that the user can move to any one of the processes within the cognitive service record component by clicking on any of the tabs "Requests," "Encounter Info" or "Pt. Summary" at any time during processing of the cognitive service record component. Similarly, the user can move to any one of the processes or tabs within each major subsystem (e.g., patient chart subsystem, counseling subsystem, etc.) by clicking on any of the tabs displayed during processing of the subsystem.

Referring to Figure 5I, processing of the encounter information with respect to the cognitive service record component will now be described. During encounter information processing, the pharmaceutical care cognitive services management system collects any additional information relating to the patient which is specific to the present encounter with the patient. For example, other prescriptions are listed. In addition, prescriptions may be added to or removed from this list by selecting the "Add" option or the "Remove" option at **191** or **192**, respectively. Still further, the user can enter any obstetrics information, any specific problems reported by the patient, and any current over-the-counter medications being taken by the patient. Finally, the patient's physicians are listed, and the user can add physicians to this list or remove physicians from this list by selecting the "Add" option or the "Remove" option at **193** or **194**, respectively. This list can be scrolled to permit the user to review any particular physician.

Finally, PC-CSMS displays a patient summary similar to that illustrated in Figure 5J on display device **20** upon selection of the "Pt. Summary" tab at **181**, generally. The patient summary displayed to the user displays basic patient information collected during patient chart and cognitive service record components of the patient intake subsystem, as well as a list of the patient's physicians, allergies and medical conditions. This patient summary gives the pharmacist a quick summary of the patient information and ready access to important information already requested by PC-CSMS, entered by the user and stored by PC-CSMS.

Detailed Operation: Cognitive Processing Subsystem

Referring to Figures 5K-5N, the cognitive subsystem will now be described in detail. Similar to the patient chart and cognitive service report components of the patient intake subsystem, the cognitive subsystem may be invoked by selecting the "COG" key **104**. Generally, PC-CSMS **24** processes the drug regimen prior to using the cognitive subsystem. A DUR is performed in order to determine if there is anything unique about this drug, this particular patient, the particular disease, the quantities of the drug and so forth which may result in an adverse reaction of the patient to the drug. The patient does not need to be present during processing by the cognitive subsystem. Part of DUR is automatic in that PC-CSMS **24** compares the identified drug with the information in a drug database to identify side effects of the drug and any interactions that may occur as a result of this particular patient using the identified drug. The result of the comparison is utilized during the therapy review portion of cognitive processing. While the patient intake subsystem (i.e., patient chart and cognitive service record) may be used by a technician, the user of PC-CSMS during cognitive processing must be a pharmacist. Generally, the cognitive subsystem has four parts as indicated by the four tabs generally at **211** in Figures 5K-5N (i.e., "Encounter Review", "Standard of Care", "Therapy Review" and "Pt. Summary"). Encounter review, standard of care, therapy review or patient summary may be invoked by the user at any time during cognitive processing by selecting one of the tabs at **211**.

During encounter review, PC-CSMS **24** displays a summary of information relating to the particular encounter with the particular patient on display device **20**. An example of the information displayed during encounter review is illustrated in Figure 5K. The information displayed is reformulated for purposes of the encounter review from information previously requested by PC-CSMS and entered by the user. For example, during encounter review, drug requests are displayed, and notes relating to the encounter may be entered by the user and/or displayed. In addition, any over-the-counter consultation requests, extended consultation requests, screening requests, other prescriptions, over-the-counter drugs, and reported problems may be displayed.

If the "Standard of Care" tab is selected during cognitive processing, PC-CSMS displays a "Standard of Care" screen similar to that illustrated in Figure 5L prompting the user to categorize the current patient and to assign patient "modules" to the patient. The user can select the category from a list of options including "Low," "High" and "Special" as indicated by the "_" key adjacent the "Category" field. A patient categorized as "Low" is a basically healthy person. A patient categorized as "High" has some problems which may be chronic. In other words, the patient may have some condition that requires monitoring such as diabetes, hyperactiveness or a serious illness. Finally, the "Special" category refers to anything that the user (i.e., pharmacist) wants to specifically note such as obesity. A description of the category is also displayed. In addition, during standard of care processing, a module list is displayed from which the user may select modules to be assigned to the patient. Modules are added or assigned to a patient using "Add" key **222** in which case the modules are added to the list. Modules may be removed from the list of modules assigned to the patient by using "Remove" key **223**. In addition, medical conditions, allergies and current drugs are also displayed.

If the user decides to conduct the "Therapy Review" by selecting the appropriate tab at **211**, generally, the pharmaceutical care cognitive services management system interactively prompts the user to indicate therapy goals for the user as well as to make any necessary alterations to the prescribed drug. In essence, the therapy review portion of the cognitive subsystem is where PC-CSMS displays the results of the automated portion of the drug utilization review and allows the pharmacist to review these results and make any necessary changes.

Referring to Figure 5M, the drugs prescribed and to be reviewed by the pharmacist are displayed on display device **20**. The list of drugs includes not only the prescription number, the drug, the form of the drug (e.g., tablet), as well as the quantity of each unit, but also an indication as to whether the pharmacist has completed the therapy review for each particular drug. If the therapy review has been completed, "Done" is listed adjacent to the drug. Problem categories are also listed during therapy review. The problem categories indicate any potential problems which may arise from interactions between drugs, interactions between drugs and food, the lifestyle of the patient, interactions between drugs and allergies, interactions

between drugs and diseases, the particular patient or the particular patient's compliance with the prescription and proposed drug therapy. If the automated portion of the DUR determines that a possible problem could occur, it is "flagged" adjacent the category in the listing of problem categories. In addition, the pharmacist must complete the analysis of the problem category.

In addition, during therapy review, prescription information is listed in the form of identification of the drug, quantity, and the days the drug is to be taken. The physician's name (e.g., Flores, H.J.), and instructions for taking the medication also are displayed. During therapy review, PC-CSMS requires the pharmacist to conduct a SOAP for each flagged problem category. If two problems are flagged in any problem category, a separate SOAP must be conducted for each flag. An indication of the SOAPs conducted may be displayed on display device **20**. The SOAP must be created by the pharmacist before PC-CSMS will indicate that the problem category analysis is "Done" and that the therapy review for the drug is "Done." The SOAP subsystem will be described below with respect to Figures 5W-5X, 5CC-5EE and 7. Finally, the pharmacist may enter a goal for the therapy. This is simply an indication of the purpose of taking the drug.

Finally, by selecting the "Pt. Summary" tab at **211**, generally, the user may review a summary of patient information during the processing by the cognitive subsystem. If this tab is selected, a summary of patient information is displayed similar to that illustrated in Figure 5N. The information, as discussed before with respect to patient summary during cognitive service record processing, includes basic patient information, and listings of the patient's physicians, allergies and medical conditions.

The pharmaceutical care cognitive services management system requires the pharmacist to at least view all phases of the cognitive analysis during cognitive processing. As a result, PC-CSMS will not exit cognitive processing until everything in therapy review has at least been reviewed by the pharmacist. The only exception to this is if cognitive processing is suspended by the patient or refill interrupt which will be described below. If the cognitive processing is suspended, it is resumed after completion of the patient or refill interrupt.

Detailed Operation: Counseling Subsystem

Referring to Figures 5O-5R, processing of the counseling subsystem will now be described in detail. Similar to the patient intake subsystem (i.e., patient chart and cognitive service report) and the cognitive subsystem, the counseling subsystem may be invoked by selecting the "COU" key **105**. Generally, PC-CSMS **24** brings the patient, the pharmacist and the prescription together at the same time to complete the encounter with the patient during counseling processing. Requests noted during cognitive service record processing will be completed during counseling processing. The patient must be present during the counseling session in order to allow the user (i.e., pharmacist) of PC-CSMS **24** to complete the encounter with the patient. Similar to the cognitive subsystem, the user of the counseling subsystem must be a pharmacist. Generally, the counseling subsystem has four parts including "Therapy Management", "Standard of Care", "Encounter Management" and "Patient Summary". Therapy management, standard of care, encounter management or patient summary may be invoked by the user at any time during counseling processing by selecting the appropriate tab at **251**.

During therapy management, PC-CSMS **24** interactively prompts the pharmacist through the counseling session with the patient so that the patient understands what drug he is receiving, understands the purpose for the drug, and understands what the drug will do for him. Referring to Figure 5O, PC-CSMS **24** displays a list of the drugs prescribed for the patient including the prescription number and the identification of the drug. In addition, as illustrated in Figure 5O the therapy management for a particular drug is noted as having been completed by the inclusion of "Done" next to the drug. Information previously received by PC-CSMS **24** with respect to the highlighted drug is also displayed, including the drug name, the form of the drug, the size of the unit dosage, the number of units of the drug, the number of days the drug is to be administered, and the prescribing physician's name. In addition, instructions for taking the drug as well as the therapy goal are also displayed. Finally, the therapy goal, if completed during processing by the cognitive subsystem, will be displayed. Otherwise, the pharmacist can complete this field during therapy management.

Also during therapy management, the pharmacist using PC-CSMS will advise the patient with respect to the drug, how the drug helps the disease, how to properly take the drug, what to avoid taking while on the

drug, what, if any, follow-up is necessary, and so forth. As the user of PC-CSMS completes each portion of this counseling session, the user must indicate that each portion has been discussed with the patient and completed by making an appropriate indication on the screen as illustrated in Figure 5O. Still further, the pharmacist makes an observation with respect to the commitment of the patient to the drug therapy and records the results of the observation. Finally, the pharmacist enters any questions the patient may have with respect to the drug or the proposed therapy. Patients' questions are processed by PC-CSMS **24** as SOAPs. As a result, a SOAP is created for each question listed. The SOAP subsystem will be discussed below with respect to Figures 5W-5X, 5CC-5EE and 7.

If the "Standard of Care" tab is selected during counseling processing, PC-CSMS **24** displays any modules assigned to the patient on display device **20** as illustrated in Figure 5P. If any modules were assigned to the patient during processing by the cognitive subsystem, the steps to be performed for each module will also be displayed on display device **20**. PC-CSMS **24** processes these steps interactively by requiring the pharmacist to indicate that each step listed has been completed, and if testing is needed, prompts the pharmacist to record the results of the testing such as the results of taking the patient's blood pressure.

If the "Encounter Mgmt" tab at **251**, generally, is selected during counseling processing, PC-CSMS **24** identifies tasks to be completed for this encounter with this particular patient. The tasks to be completed may include module steps not completed during the standard of care procedure for counseling, SOAPs not completed, and notes previously generated by the pharmacist or a technician that requires some action. Thus, PC-CSMS **24** keeps track of modules, SOAPs and notes so that all modules, SOAPs and notes have been completed or addressed prior to completing processing by the counseling subsystem for the patient.

During encounter management, PC-CSMS displays a list of incomplete items which need to be addressed by the pharmacist and a list of completed items previously addressed by the pharmacist on display device **20** as illustrated in Figure 5Q. In addition, PC-CSMS displays item types which allows a listing of incomplete items to be subset into types such as "SOAPs", "Follow-ups" or "Procedures".

Finally, in response to selection of the "Pt. Summary" tab at **251**, generally, during counseling processing, a summary of patient information similar to that displayed by PC-CSMS during processing of the cognitive service record and by the cognitive subsystem is displayed on display device **20** as illustrated in Figure 5R. The information displayed includes basic patient information and listings of the patient's physicians, allergies, and medical conditions.

Detailed Operation: Report Generation Subsystem and Dispensing

Pharmaceutical care cognitive services management system **24** also generates reports which may be given to the patient and which may be maintained by the pharmacist or sent to the physician. The reports summarize the encounter. These reports may include health related reports as well as billing statements for the counseling provided by the patient. Various types of billing statements may be generated including a standard CSR report, a NARD report which allows a pharmacist to bill for cognitive services, and a HCFA 1500 report which is used in association with health care paid for by government agencies. Multiple bills for services may be included as separate line entries on a single billing statement. The user of PC-CSMS **24** may initiate the generation of various reports by selecting a "Report" key (not shown).

PC-CSMS **24** may also be connected to a dispensing system (not shown) used for dispensing the identified drug. Dispensing may be done at the same time as the cognitive session, but is typically completed prior to the counseling session.

Detailed Operation: Patient and Refill Interrupt Subsystems

As previously discussed, PC-CSMS **24** allows the user to suspend processing by the cognitive subsystem or the counseling subsystem by invoking a patient interrupt or a refill interrupt. If the patient interrupt or refill interrupt are invoked, and PC-CSMS is presently processing cognitive or counseling sessions, PC-CSMS **24** suspends the cognitive or counseling session, processes the patient or refill interrupt, and, upon completion of processing of the patient or refill interrupt, resumes processing of the

suspended cognitive or counseling session. The detailed operation of the patient interrupt will be described below. Detailed operation of the refill interrupt will be described thereafter.

Referring to Figures 5S, 5T and 6, the patient interrupt subsystem will now be described in detail. Similar to the other operations available to the user of PC-CSMS, processing by the patient interrupt subsystem may be invoked by selecting the "Pt." key **106**. Generally, in response to a user invoking the patient interrupt subsystem, PC-CSMS **24** will give the user the option of suspending processing by the cognitive or counseling subsystem, or canceling the interrupt and continuing processing by the cognitive or counseling subsystem. If the user invokes the patient interrupt subsystem and PC-CSMS **24** is in the cognitive processing state, PC-CSMS **24** prompts the user by displaying a screen similar to that illustrated in Figure 5S to select whether the user wants to suspend the cognitive processing and resume it at a later time, cancel the interrupt and continue the current cognitive processing session, or seek on-line assistance (i.e., help). Similarly, if the user selects the patient interrupt subsystem and PC-CSMS **24** is in the counseling processing state, PC-CSMS prompts the user by displaying a screen similar to that illustrated in Figure 5T on display device **20** to either suspend the current counseling session and resume it at a later time, cancel the interrupt and continue the current counseling session or seek on-line help.

Whether PC-CSMS is executing in the cognitive subsystem, counseling subsystem or some other processing state, PC-CSMS will prompt the user to either select a patient, intake a patient, add a new patient or cancel the patient interrupt by displaying a screen similar to that illustrated in Figure 5U on display device **20** upon selection of the "Pt." key **106**. During processing by the patient interrupt subsystem, fields for entry of the "Last Name" and "First Name" of a patient, and a listing of patients are displayed on display device **20**. The listing of patients may be scrolled to locate a patient either alphabetically before or after those displayed in the window illustrated in Figure 5U. In addition, options for processing a patient interrupt are provided to the user through the use of keys or buttons **291-296**. In particular, the user may select the "Pt. Chart" key **291** to view or update the patient chart of the interrupting patient, "Pt. Requests" key **292** to take in information from the patient, fill a new prescription, refill an existing

prescription or to document reasons for the patient's call, "New Pt." key **293** to create a patient chart for a new patient, or "Cancel" key **294** to terminate the patient interrupt and return to the processing from which the patient interrupt was invoked. The user may also select the "Help" key **295** to seek on-line help provided by PC-CSMS or the "Search" key **296** to search for the patient name entered by the user. "Pt. Chart" key **291** and "Pt. Requests" key **292** are only enabled for a valid patient name entered in the Last Name and First Name fields or selected from the list of patients. "New Pt." key **293** is enabled whether or not a valid patient name is entered.

Generally, if the patient for whom the patient interrupt subsystem was invoked is listed in the list of names, the user may scroll the list of names until the interrupting patient is located within the list. Similarly, the user may enter the patient's last name followed by the first name in the appropriate fields and PC-CSMS will automatically scroll the list of patient names to locate the name of the patient entered by the user upon the user's selection of the "Search" key **296**. If "Pt. Chart" key **291** is selected, the patient chart for the interrupting patient is retrieved and the patient chart component of the patient intake subsystem previously described is initiated to allow the user to review or update the patient chart for the interrupting patient. If the "Pt. Requests" key **292** is selected by the user, PC-CSMS **24** initiates the cognitive service record component of the patient intake subsystem for the interrupting patient identified in the list of patient names. The cognitive service record processing was previously described above. If the "New Pt." key **293** is selected by the user, PC-CSMS transfers control to the patient chart component of the patient intake subsystem which was previously described to allow the user to create a patient chart for a new patient. Finally, if the "Cancel" key **294** is selected by the user, processing by the patient interrupt subsystem is terminated and control is returned to the calling process.

If the patient interrupt subsystem was invoked during either cognitive or counseling processing, PC-CSMS resumes processing of the suspended cognitive process or the suspended counseling process, respectively, upon completion of processing by the patient interrupt subsystem.

Upon selection of "Refill" key **107**, PC-CSMS invokes the refill interrupt subsystem. Similar to the patient interrupt subsystem, PC-CSMS will suspend the current processing by the cognitive subsystem or

counseling subsystem if PC-CSMS is processing a cognitive session or a counseling session at the time the refill interrupt subsystem is invoked by the user. PC-CSMS **24** will prompt the user to decide whether to suspend the current cognitive or counseling sessions and resume processing of the respective session upon completion of the refill interrupt processing, or to cancel the interrupt and continue the current cognitive or counseling session. The system prompts the user to make this decision and selection by displaying screens similar to those illustrated in Figures 5S or 5T on display device **20**. If the refill interrupt subsystem was invoked while PC-CSMS **24** was processing any procedure other than a cognitive session or counseling session, PC-CSMS simply terminates those other sessions.

Upon selection of the refill interrupt, PC-CSMS displays a screen similar to that illustrated in Figure 5V on display device **20** which provides a field (i.e., "Rx #") for the user to enter the prescription number of the drug to be refilled. In addition, the system also displays information corresponding to the particular prescription number and provides the user with the options of initiating a refill procedure by selecting the "Refill" key **301**, finding a patient by selecting the "Find Pt." key **302**, canceling processing by the refill interrupt subsystem by selecting the "Cancel" key **303** or asking the system for on-line help by selecting the "Help" key **304**. "Refill" key **301** is only enabled if it is determined that a valid prescription number was entered in the "Rx #" field.

Upon the user's entry of the number of the prescription to be refilled, PC-CSMS **24** makes the determination as to whether the prescription number is a legitimate number. If the prescription number is a legitimate number and the user selects "Refill" key **301**, control is transferred to processing of the cognitive service record for the entered prescription number. If the prescription number entered by the user is legitimate and the user selects the "Find Pt." key **302**, control is transferred to the patient processing and the patient intake screen similar to that illustrated in Figure 5U is displayed on display device **20** to allow the user to locate the patient for the particular prescription. The system will automatically highlight the name of the patient in the list of patient names of Figure 5U which corresponds to the prescription number entered by the user during processing by the refill interrupt subsystem. If the "Cancel" key **303** is selected, processing by the refill interrupt subsystem is terminated whether

or not the prescription number is legitimate. If the "Help" key **304** is selected, control is transferred to help menus to allow the user to access on-line assistance.

If a determination is made that the prescription number entered by the user is not legitimate, the "Refill" key **301** will be inactive. However, the user may select the "Find Pt." key **302**, the "Cancel" key **303** or the "Help" key **304**. The only difference in the processing is if the "Find Pt." key **302** is selected, control is transferred to patient processing and the patient intake screen similar to that illustrated in Figure 5U is displayed on display device **20**, but no patient name will be highlighted corresponding to the prescription number since the prescription number was not legitimate.

Finally, upon completion of the processing by the refill interrupt subsystem, a determination is made as to whether control by the patient interrupt subsystem was received from either a suspended cognitive session or a suspended counseling session. If the refill interrupt subsystem was invoked during either cognitive or counseling processing, PC-CSMS allows the user to resume processing of the suspended cognitive process or the suspended counseling process, respectively, upon completion of processing by the refill interrupt subsystem.

Referring to Figure 6, a high level flowchart of the processing by the patient and refill interrupt subsystems **36** is illustrated. The high level control of the patient and refill interrupt subsystems will now be described. A determination is made at **310** as to whether the patient interrupt subsystem was invoked. If the patient interrupt subsystem was invoked, a determination is made at **311** as to whether the system is currently processing a cognitive session for a first patient. If it is determined at **311** that the system is currently processing a cognitive session for a first patient, the cognitive session for the first patient is suspended at **312** and the patient interrupt for the second patient is processed at **313**. Upon completion of the processing of the interrupt for the second patient, control is returned to the suspended cognitive session for the first patient and processing of that cognitive session is resumed at **314**.

If it is determined at **311** that cognitive processing for a first patient is not currently being performed, a determination is made at **315** as to whether the system is presently processing a counseling session for a first patient. If it is determined at **315** that the system is presently processing a counseling

session for a first patient, processing of the counseling session for the first patient is suspended at **316** and control is transferred to patient processing for processing the interrupt for the second patient at **317**. Upon completion of the processing for the second patient at **317**, control is returned to the suspended counseling session and processing of the suspended counseling session for the first patient is resumed at **318**. If it is determined at **315** that a counseling session for the first patient is not presently being processed, then the current session (e.g., patient intake, cognitive service record, etc.) is terminated and the control is transferred to patient processing to process the interrupt for the second patient at **319**.

If it is determined at **310** that the patient interrupt was not selected, a determination is made at **320** as to whether the refill interrupt was selected. If the refill interrupt was selected, a determination is made at **321** as to whether the system is presently processing a cognitive session for a first patient. If the cognitive session for a first patient is being processed, this cognitive session for the first patient is suspended at **322** and the refill interrupt for the second patient is processed at **323**. Upon completion of the processing of the refill interrupt for the second patient, control is returned to the suspended cognitive session for the first patient, and processing of the suspended cognitive session for the first patient is resumed at **324**.

If it is determined at **321** that a cognitive session for a first patient is not being processed, a determination is made at **325** as to whether a counseling session for a first patient is being processed. If a counseling session for the first patient is being processed, the counseling session for the first patient is suspended at **326** and the refill interrupt for the second patient is processed at **327**. Upon completion of the processing of the refill interrupt for the second patient at **327**, control is returned to the suspended counseling session and the processing of the suspended counseling session is resumed at **328**.

If it is determined at **325** that a counseling session for a first patient is not presently being processed, the current session (e.g., patient intake, cognitive service record, etc.) is terminated and the refill interrupt is processed at **329**.

Finally, if it is determined at **320** that the refill interrupt was not selected by the user, a determination is made at **330** as to whether any of the other interrupts were selected. If any of the other interrupts was selected,

the current session is terminated and the other interrupt is processed at **331**. If it is determined at **330** that none of the other interrupts was selected, the current session continues to be processed until either a different session is selected or one of the interrupts is selected.

Detailed Operation: SOAP/RAR Subsystems

Referring to Figures 5W-5X and 7, the SOAP (Subjective, Objective, Assessment and Plan) subsystem and the RAR (Reason, Action, Result) subsystem will now be described in detail. Similar to the patient and refill interrupt subsystems, the SOAP subsystem may be invoked at any time during use of the pharmaceutical care cognitive services management system. However, unlike the patient and refill interrupt subsystems, selection of the "SOAP" key **108** to invoke the SOAP subsystem, will not suspend any session currently being processed by PC-CSMS. Nonetheless, the SOAP subsystem can be invoked at any time during use of PC-CSMS. Still further, as described above, SOAPs are created for patient questions, DUR problems, commitment issues and other pharmacist concerns.

Upon selection of the "SOAP" key **108**, PC-CSMS **24** displays a screen similar to that illustrated in Figure 5W on display device **20**. A number of fields are displayed which are to be completed by the user, in this case, the pharmacist. The fields include "Context," "Subjective," "Objective," "Assessment," "Plan" and "Procedure." The meanings of subjective, objective, assessment and plan were previously described above. Context refers to the identity of the session being processed when the SOAP subsystem was invoked. For example, if the SOAP subsystem had been invoked during processing of a cognitive service record session, the context would be identified as "CSR." The user may also select a procedure to be completed as a result of the processing by the SOAP subsystem from a predefined list as indicated by the "_" symbol next to the "Procedure" field.

A number of options are provided by PC-CSMS for processing by the SOAP subsystem. These options include indicating that the SOAP process is completed by selecting the "OK" key **351**, suspending the processing by the SOAP subsystem by selecting the "Suspend" key **352**, canceling or terminating the processing of the current SOAP being processed by selecting the "Cancel" key **353**, adding a RAR to the SOAP by selecting the

"Add RAR" key **354**, deleting the RAR associated with the SOAP by selecting the "Delete RAR" key **355**, and viewing the on-line help by selecting the "Help" key **356**. The SOAP may not be identified as being completed until all of the fields have been completed by the user. Suspension of the SOAP merely suspends the SOAP to allow the user to complete the SOAP at a later time. The addition of a RAR adds a "blank" RAR to be associated with the SOAP. The "blank" RAR must be completed by the user at some later time.

If the SOAP interrupt is invoked for a particular patient and a number of SOAPs are already associated with the patient, a list of SOAPs will be displayed for the user. This allows the user to select an individual SOAP to process.

Suspension and cancellation of the SOAPs will be understood by those skilled in the art. Selection of "Cancel" key **353** or **363** will undo any changes during creation or update of a SOAP or a RAR.

Finally, as previously mentioned, the selection of the "Add RAR" key **354** adds a "blank" RAR associated with the present SOAP being processed. Upon selection of the "Add RAR" key **354**, the system displays a "blank" RAR on display device **20** similar to that illustrated in Figure 5X. If a RAR which is already associated with the current SOAP being processed by the SOAP subsystem is to be updated or at least reviewed by the user, the user may transfer control to the RAR subsystem by selecting the "RAR" tab displayed generally at **357** in Figure 5W. Similarly, while processing a "RAR," the user may return to the SOAP to which the present RAR is associated by selecting the "SOAP" tab illustrated at **357** in Figure 5X.

When creating a RAR using the RAR subsystem, a number of fields must be completed by the user. These fields, as illustrated in Figure 5X, include fields for "Reason," "Action," "Result," "Intervention," "Description," "Amount to Bill," "Procedure" and "Notes." Reason, action and result were previously described above and will not be repeated. The intervention field allows the user to enter the level of the intervention for purposes of recovering the value added by the pharmacist. In addition, the pharmacist should also include a description about the RAR encounter, any procedure to be performed, and complete any notes with respect to this RAR. The contents of the reason, action, result, intervention and procedure fields may

be selected from a predefined list as indicated by the "_" next to each of those respective fields.

The user may select from a number of options during processing of a RAR by the RAR subsystem. These options include indicating that the creation or processing of the RAR is completed by selecting the "OK" key **361**, suspending the processing of the RAR to permit completion of the RAR at a later date by selecting the "Suspend" key **362**, canceling or terminating the processing of the present RAR by selecting the "Cancel" key **363**, adding an additional "blank" RAR by selecting the "Add RAR" key **364**, deleting the present RAR by selecting the "Delete RAR" key **365**, seeking on-line help from the system by selecting the "Help" key **366** or performing the procedure by selecting the "Perform Procedure" key **370**. In addition, as indicated at the bottom of the screen illustrated in Figure 5X, the user may add, edit or delete notes by selecting the keys "Add" **367**, "Edit" **368** or "Delete" **369**, respectively. Notably, a RAR cannot be deleted after it has been completed and identified as being "OK." In effect, identifying a RAR as being "OK" results in it being "committed" to the database. The content of the intervention field essentially relates to the amount of work performed by the pharmacist with respect to this particular RAR.

As previously described, more than one RAR may be associated with a single SOAP. As a result, a multiple number of "RAR" tabs may appear at **357** on the screen displayed in Figure 5X.

Referring to Figure 7, a high level flowchart illustrating the control of the processing by the SOAP subsystem in combination with the RAR subsystem to allow multiple RARs to be associated with a single SOAP will now be described. A determination is made at **401** as to whether the SOAP subsystem was invoked. If it is determined at **401** that the SOAP subsystem was invoked, PC-CSMS will create a new SOAP or process an existing SOAP for the current patient being processed at **402**. Once the SOAP is completed, or even during the processing of a SOAP, the user may decide to create a first RAR. If it is determined at **403** that a first RAR is to be added, PC-CSMS will process the first RAR. Ifit is determined at **403** that a first RAR was not to be created or was not selected but rather a second RAR was selected for processing, control is transferred to block **405**.

A determination is made at **405** as to whether a second RAR was to be created or was selected for processing. If a second RAR was to be

created or was selected for processing, a determination is then made at **406** as to whether the second RAR is associated with the same SOAP as the first RAR. If it is determined at **406** that the second RAR is associated with the same SOAP as the first RAR, the second RAR is processed at **407** and an association is made between the first RAR and the second RAR to indicate that the first RAR and the second RAR are associated with the same SOAP at **408**. Any additional RARs associated with the same SOAP will be processed at **409**, and upon completion of processing of any of the SOAPs, or on suspension or cancellation of any of the SOAPS, control is transferred to any session or interrupt selected by the user from those illustrated at **101-113** displayed on the screen illustrated in Figure 5A. If a determination is made at **405** that a second RAR is not to be processed, control simply remains with the SOAP subsystem as long as the SOAP is being processed, after which control will be transferred to any of the sessions or interrupts **101-113** illustrated in Figure 5A and selected by the user.

If a determination is made at **406** that the second RAR is not associated with the same SOAP as the first RAR, the second RAR is simply processed in association with the SOAP it is related to.

Detailed Operation: Note

PC-CSMS **24** also processes "Note" interrupts upon the selection of the "Note" key **109** by the user. Similar to processing of a SOAP interrupt by the SOAP subsystem, PC-CSMS displays a summary list of all notes for the particular patient presently being processed upon selection of the note interrupt. There are three types of notes processed by PC-CSMS, i.e., general notes, attentions and follow-ups. A general note records information about a patient or an encounter that does not fall within another field provided by the system. General notes not only appear in a note screen but also appear in the patient summary displayed during processing of the cognitive service record component of the patient intake subsystem as well as other processing. The general notes are associated with the patient using the patient ID number.

The attention note is used for the purpose of bringing some piece of information to the attention of a pharmacy employee at some later time. The attention note is flashed up on display device **20** during a specific stage of processing for a particular patient. The attention note also includes an

indication to associate the note with a particular part of the processing for the particular patient (i.e., intake subsystem, cognitive subsystem or counseling subsystem). Finally, a follow-up note provides a reminder to a pharmacy employee to perform some procedure. The follow-up note must be processed by creating a SOAP for the follow-up note. The follow-up note also includes an indication as to when the follow-up with the patient is scheduled for, i.e., this visit, next visit, or date. When the date of the follow-up arrives, the follow-up note will appear in the incomplete list displayed on display device **20** during the encounter management portion of processing by the counseling subsystem.

Referring to Figures 5Y, 5Z, 5AA and 5BB, the control of the processing of the note interrupt will now be described. Upon selection of the note interrupt key **109** by the user, a listing of the notes for the particular patient being processed is displayed on display device **20** as illustrated in Figure 5Y. Information displayed on the screen may include patient notes as well as any details with respect to the notes. A number of options are available for processing during the note interrupt. These options include creating a new note by selecting the "New Note" key **421**, creating a follow-up note by selecting the "Follow-Up" key **422**, editing a note by selecting the "Edit" note key **423**, closing the note by selecting the "Close" key **424** and reviewing on-line help by selecting the "Help" key **425**. If a new note is selected, one of Figures 5Z, 5AA or 5BB will be displayed. The particular progress note to be displayed will depend on which type of note (i.e., "General," "Attention" or "Follow-up") is selected and indicated in the "Type" field of the progress note. If the "Follow-up" key **422** is selected, a follow-up note will be displayed. If the "Edit Note" key **423** is selected, the note highlighted in the patient note list will be displayed. Closing of the note indicates that the note has been processed. "Edit Note" key **423** is only enabled when the list of patient notes contains at least one note.

Referring to Figure 5Z, a "General" note is illustrated as indicated by the indication next to "General" in the type field. Each note includes a field to be completed by the user to indicate the context for the note. Each note can also be reviewed, updated or closed. By selecting the "OK" key **431** in Figure 5Z, any updates to the notes are saved. If the "Cancel" key **432** is selected, any updates initiated during the current processing of the progress

note are cancelled. If the "Help" key **433** is selected, on-line assistance can be accessed.

Referring to Figure 5AA, an "Attention" note is illustrated. Similar to the general note, the attention note also includes a field to indicate the context for the note as well as "OK," "Cancel" and "Help" keys **441**, **442** and **443**, respectively. In addition, an indication that the particular note is of the type "Attention" is also displayed as illustrated in the type field. Finally, the attention note also includes a field for listing the part of the process during which the note is to be drawn to the attention of the pharmacy employee (i.e., intake, cognitive or counseling).

Referring to Figure 5BB, a "Follow-up" note is illustrated. Similar to the general note and attention note, the follow-up note also includes a context field and a field for indicating the type of the note as well as the "OK" key **451**, "Cancel" key **452** and "Help" key **453**. In addition, the follow-up note includes a field for indicating when the note is to be processed (i.e., this visit, next visit, or a particular date), and a calendar which highlights the date for processing the note.

Detailed Operation: Drug Monograph Subsystem

The user may invoke the drug monograph interrupt subsystem by selecting the "Mono" key **110**. Similar to the SOAP and Note interrupt subsystems, invoking of the drug monograph subsystem does not suspend any processing of any session. Rather, invoking the drug monograph subsystem results in interruption and termination of the current session being processed by PC-CSMS. Generally, the drug monograph subsystem is simply an interface provided between PC-CSMS and a drug database to allow the user to access drug information. This interface with a drug database will be understood generally by those having skill in the art and may take any number of forms for interfaces between a system such as PC-CSMS **24** and any of the standard drug databases, including that marketed by Medi-Span of Indianapolis, Indiana.

Pharmaceutical Care Cognitive Services Management System Menu Bar

The PC-CSMS menu bar illustrated in Figure 5A which includes the menu bar entries of "File," "Edit," "Views," "Action," "Reports," "Utilities," and "Help" operates like any other menu bar in a Windows environment.

Selection of any one of these entries in the menu bar will result in the "pulling down" of a menu from which the user may select a variety of options. Selection of the "File" entry in the menu bar will result in displaying of a menu providing the options of "Save" or "Exit." Selection of the menu bar entry "Edit" provides the user with the options of "Undo," "Cut," "Copy," or "Paste." Selection of the menu bar entry "Views" results in the "pulling down" of a menu providing the user with the options of "Orders," "Patient," "CSR," "Cognitive," or "Counseling." Still further, selection of the menu bar entry "Action" results in the display of a pull-down menu providing the user with the options of "Open PT," "Refill Rx," "SOAP," "Note," and "Monograph." Similarly, selection of the "Reports" option from the menu bar results in the display of a pull-down menu providing the user with the options of "Patient Intake" and "To Do List." Still further, selection of the "Utilities" option from the menu bar results in the display of a pull-down menu providing the user with the options of "Users," "Drug List," "Physicians," and "Diagnoses." Finally, selection of the menu bar entry "Help" will result in the display of a pull-down menu for help options.

Working Example of Multiple RARs Associated With a Single SOAP

Referring to Figures 5CC-5EE, a working example of multiple RARs associated with a single SOAP will now be described. Upon selecting the SOAP key **108**, a "blank" SOAP tab will be displayed on display device **20**. The blank SOAP tab prompts the user to complete the "Context," "Subjective," "Objective," "Assessment," "Plan" and "Procedure" fields. In the particular example illustrated in Figure 5CC, the Context is "CSR" which is selected from a list of predefined context as indicated by the "_" symbol adjacent to the Context field. The user of the system then proceeds to complete the Subjective, Objective, Assessment and Plan fields. In this particular example, the pharmacist has made a subjective observation of the patient in that he believes the patient drinks heavily and has entered this subjective information into the Subjective field. In addition, the pharmacist also has made an objective or factual based observation in that the patient's eyes appear to be bloodshot and his breath smells like liquor at 11:00 a.m., and has entered this factual based information in the Objective field. The user is then prompted to enter an assessment based on the subjective and

objective information in the Assessment field. In this particular example, the pharmacist assesses the situation indicating that there could be possible complications with the drug therapy as well as general health problems. Finally, in response to the interactive prompting by the pharmaceutical care cognitive services management system, the pharmacist enters his Plan to be followed based on the assessment. In this particular case, the pharmacist has selected the plan of talking to the patient about complications with the drug therapy and talking to the patient's physician about health issues. The pharmacist has decided not to enter any procedure in the Procedure field at this point.

At this point, the pharmacist can either indicate that the SOAP is completed and commit the SOAP to the database by selecting the "OK" key **351**, suspend the processing of the SOAP at this time by selecting the "Suspend" key **352**, cancel any updates made to the SOAP by selecting the "Cancel" key **353** or add a RAR to the SOAP by selecting the "Add RAR" key **354**.

In response to the selection by the user of the "Add RAR" key **354** in Figure 5CC, a blank "RAR" tab screen will be displayed on display device **20** prompting the user to complete the various fields for this first RAR associated with the SOAP. The first RAR of this working example is illustrated in Figure 5DD. The user is prompted to complete the "Reason," "Action," "Result," "Intervention," "Description," "Procedure" and "Notes" fields. The user entry for the Reason, Action, Result and Intervention fields may be selected from predefined lists as indicated by the "_" symbol adjacent to each of those respective fields. In this particular example, the pharmacist, in response to the prompt to complete the Reason field, indicated that the reason was alcohol precaution. In addition, in response to the prompt to complete the Action field, the user entered the action of patient education/instruction. Still further, in response to the system's prompting the user to complete the Result field, the user entered the result as unchanged drug therapy. Still further, in response to the system's prompting the user to complete the Intervention field, the user selected Level 2 for a low complexity or an intervention of less than 15 minutes from the predefined list of intervention options. The user also entered an indication in the Description field that the patient was not forthcoming about the alcohol

problem and that the pharmacist is still concerned. Finally, the pharmacist decided not to enter any procedure or notes for this particular RAR.

During the process of completing the RAR, the user has the options of indicating that the RAR has been completed and committing the RAR to the database by selecting the "OK" key **361**, suspending the processing of the RAR and allowing it to be completed at a later time by selecting the "Suspend" key **362**, or cancelling the updates made to the RAR during this session by selecting the "Cancel" key **363**. In addition, the user may add an additional RAR by selecting the "Add RAR" key **364** or delete this RAR by selecting the "Delete RAR" key **365**. Finally, the user could select the "Add" key **367** to add a note.

Assuming for purposes of this example that upon completing the first RAR illustrated in Figure 5DD, the user selected the "Add RAR" key **364**, a second "blank" RAR screen will be displayed on display device **20**. An example of the second RAR completed by the user for this example is illustrated in Figure 5EE. PC-CSMS prompts the user to complete the Reason, Action, Result, Intervention, Description, Procedure and Notes fields as with other RARs. In this particular example of the second RAR, the user has selected the same reason as being alcohol precaution. Since this is a different RAR, the user has selected a different action, i.e., prescriber consulted, to indicate that an action different from that taken in the first RAR is to be taken in this second RAR. The user in the second RAR also selected the unchanged drug therapy as the result. In this second RAR, the user indicated that the intervention level was Level 3 indicating that the intervention required by the pharmacist to consult with the physician was of moderate complexity or less than 30 minutes. Finally, the user indicated in the Description field that the doctor was aware of the problem and is trying to get the patient into alcohol therapy. Similar to any other RAR, the user may select the options of "OK," "Suspend," "Cancel," "Add RAR" and "Delete RAR."

As noted above, the user could add a third and a fourth RAR to this particular SOAP. In any event, each of these RARs are associated with the SOAP indicated at the tab adjacent to the RAR tab in Figures 5CC-5EE.

Working Example of Patient Interrupt

Referring to Figures 5FF-5KK, a working example of processing by the patient interrupt subsystem of a patient interrupt will now be described. Upon selecting the "Pt." key **106**, PC-CSMS **24** will suspend the current session if the current session is either a cognitive or a counseling session. In response to selection of the "Pt." key **106**, PC-CSMS **24** will prompt the user to indicate whether the user wants to suspend the cognitive or counseling session, or cancel the interrupt and continue the cognitive or counseling session (see Figures 5S and 5T). If the user selects to suspend the present cognitive or counseling session, the present session will be suspended and control is transferred to the patient intake subsystem, and displays "Patient Intake" on display device **20**. Otherwise, the user may cancel any other session being currently processed and transfer control to the "Patient Intake" display.

Referring to Figure 5FF, the system prompts the user to enter the name of the patient interrupting the user in the fields "Last Name" and "First Name" as illustrated in Figure 5FF. If no names are displayed in a list of names, then the user must enter the "Last Name" and "First Name" in the appropriate fields. Otherwise, if names are listed in the list of names, the user may select one of those names by either entering the name in the "Last Name" and "First Name" fields or selecting the name from the list using an appropriate input device. While the "Last Name" and "First Name" fields remain empty, the "Pt Chart" key **291**, "Pt Requests" **292**, "New Pt" key **293** and "Search" key **296** are not enabled.

Upon entering a last name such as, for example, a name beginning with the letter "R" as illustrated in Figure 5GG, PC-CSMS **24** then displays a list of patient names in the Name Table and searches the list of names for a match between the name entered by the user and those contained in the list of patient names. Upon locating the first match, PC-CSMS then enables "Pt Chart" key **291** and "Pt Requests" key **292** to permit the user to either transfer control to the patient chart component of the patient intake subsystem for the patient listed, or take in a prescription for the patient listed by selecting the "Pt Chart" key **291** or "Pt Requests" key **292**, respectively.

As the user continues to enter the name of the second patient who is interrupting the user, PC-CSMS **24** will continue to search the list of patient names for the closest match among those names listed in the list of patient names. Referring to Figure 5HH, the user has entered "Rogers" in the Last

Name field and "Christy" in the First Name field. In response, PC-CSMS **24** locates the name "Rogers, Christy Kane" in the list of patient names. The system, in addition to continuing to enable the "Pt Chart" key **291** and "Pt Requests" key **292**, also enables the "New Pt" key **293** since PC-CSMS is not sure whether the patient name entered by the user is the patient highlighted in the list of patient names or is a new patient with the same first name. At this stage, the user may either select to review the patient chart or intake a prescription for this patient during which steps the user will confirm that this interrupting second patient is the same as the patient name highlighted in the list of patient names. However, if the user knows that the patient name entered by the user is not the same person as that highlighted in the list of patient names, the user can then transfer to process this second patient as a new patient by selecting the "New Pt" key **293**.

Assuming for purposes of this example that the user selects the "Pt Chart" key **291**, control is transferred to the patient chart component of the patient intake subsystem resulting in display of the "General" tab as illustrated in Figure 5II for the patient name highlighted in the list of patient names illustrated in Figure 5HH. At this point, the user can determine based on the personal information listed in the general tab for the patient chart for the second patient whether the second patient is, in fact, the same as the patient whose information is displayed on the screen illustrated in Figure 5II. Thus, the user can review the patient chart. In addition, at this stage, the user can also update any field of the patient chart within any of the tabs including "General," "Insurance," "Medical," "Miscellaneous," "Drug Profile" and "CSR History."

Referring to Figure 5HH, if the user selected the "Pt Requests" key **292** for the patient whose name is highlighted in the list of patient names, control is transferred to the cognitive service record component of the patient intake subsystem to begin the task of taking in an over-the-counter or prescription drug. As a result, PC-CSMS **24** displays the "Requests" tab for the cognitive service record for the patient whose name was highlighted in the list of patient names in Figure 5HH (see Figure 5JJ). At this point, processing by the interrupt subsystem of the patient interrupt continues with the processing of the cognitive service record component in the same manner as that described above with respect to the processing of cognitive service record sessions.

Referring again to Figure 5GG, if the user entered a name in the First Name field such that PC-CSMS **24** would not find a match with those names contained in the list of patient names, no names would be displayed in that list of patient names, and PC-CSMS**24** would enable the "New Pt" key **293** but disenable the "Pt Chart" key **291** and "Pt Requests" key **292**. Referring to Figure 5KK, the user entered the name "Frank" in the First Name field resulting in the finding of no match with any of the names contained in the list of patient names. As a result, the user can only select to add the second patient who is interrupting the user (i.e., Frank Rogers) as a new patient to PC-CSMS or terminate the patient interrupt, or seek on-line help.

Assuming for purposes of this example that the user decided to add the interrupting patient (i.e., Frank Rogers) as a new patient to PC-CSMS **24**, the system will open a new patient chart upon the selection of the "New Pt" key **293** and transfer control to the new patient chart for this new patient. As a result of the transfer of control, PC-CSMS displays the "General" tab for the new patient chart which contains only the "Last Name" and the "First Name" of the new patient as illustrated in Figure 5LL. At this point, the user may continue to collect information relating to the patient's identity and history to be included in the patient chart and stored by PC-CSMS **24**. Thereafter, processing continues as previously described with respect to the detailed operation of the patient chart component of the patient intake subsystem noted above. Upon completion of the processing of the patient chart for the new patient, PC-CSMS **24** may resume processing of the interrupted or suspended cognitive or counseling session by transferring control to the cognitive subsystem or counseling subsystem, respectively.

Working Example of a Refill Interrupt

Referring to Figures 5MM-5RR, a working example of processing by the interrupt subsystem of a refill interrupt will now be described. Upon selecting "Refill" key **107**, PC-CSMS **24** will suspend the session presently being processed if the present session is a cognitive or counseling session, process the refill interrupt, and upon completion of processing of the refill interrupt, resume processing of the suspended cognitive or counseling session. The user has the option of preventing the suspension of the current cognitive or counseling session, and rather, cancelling the interrupt and continuing the present cognitive or counseling session. Upon selection of

the Refill key **107** from the display illustrated in Figure 5MM, PC-CSMS **24** indicates that the "Refill" interrupt has been invoked and then displays a screen prompting the user to enter the number for the prescription which is to be refilled by displaying the screen illustrated in Figure 5NN. Until the user enters a prescription number, only the "Find Pt" key **302**, "Cancel" key **303** and "Help" key **304** are enabled. The "Refill" key **301** is not enabled until a prescription number is entered by the user and PC-CSMS confirms that the entered prescription is valid. Once the user enters a prescription number in the appropriate field, PC-CSMS **24** searches the data storage device to determine whether the prescription number is a valid prescription (i.e., whether the prescription number is in the data storage device). In this example, PC-CSMS **24** has determined that the prescription number entered by the user (i.e., "0000004") is a valid prescription number and, as a result, displays basic information relating to the prescription number on display device **20** as illustrated in Figure 5OO. In addition, upon determining that the prescription is valid, PC-CSMS **24** enables the "Refill" key **301** to allow the user to request that the prescription be refilled.

Upon selection of the "Refill" key **301**, PC-CSMS **24** transfers control to the cognitive service record component of the patient intake subsystem resulting in the display of the "Request" tab of the cognitive service record on display device **20** as illustrated in Figure 5PP. Information for the drug corresponding to the prescription number will be displayed in the current prescription list. At this point, processing continues with the refill interrupt in the same manner as it does for processing of the cognitive service record described above. Once processing by the interrupt subsystem of the refill interrupt is completed for the second patient, PC-CSMS **24** may resume processing of the suspended cognitive or counseling session.

As mentioned above, the user is prompted to enter a prescription number as illustrated in Figure 5NN. In response to this prompting, the user entered the number "0000003." Upon receiving the entry of this prescription number, PC-CSMS **24** compares the prescription number against those prescription numbers contained in the data storage device to determine whether the prescription number is valid. In this example, the user entered the prescription number "0000003," which is not valid as illustrated in Figure 5QQ. As a result, no information is displayed in the prescription information section. Further, the "Refill" key **301** is disenabled. The only options

available to the user are to find the patient, cancel the refill interrupt or seek on-line help. In response to the selection of the "Find Pt." key **302**, PC-CSMS **24** begins processing what is essentially the patient interrupt by displaying on display device **20** the patient intake screen as illustrated in Figure 5RR. As a result, the user is prompted to enter the last name of the second patient who is interrupting the cognitive or counseling session. Thereafter, PC-CSMS **24** processes this refill interrupt as in the same manner as that for a patient interrupt, and upon completion of the processing of this interrupt, resumes processing of the suspended cognitive or counseling session.

In the drawings and specification, there have been disclosed typical preferred embodiments of the invention and, although specific terms are employed, they are used in a generic and descriptive sense only and not for purposes of limitation, the scope of the invention being set forth in the following claims.

THAT WHICH IS CLAIMED:

1. A computer based pharmaceutical care cognitive services management method which executes on a computer system including processing means, data storage means, display means and input means, said computer based pharmaceutical care cognitive services management method comprising the steps of:

prompting on said display means for user entry via said input means, and for storing in said data storage means, of identity and history information corresponding to a patient;

prompting on said display means for user entry via said input means, and for storing in said data storage means, of subjective information relating to assessed characteristics of said patient and objective information relating to said patient's history of drug use;

prompting on said display means for user entry via said input means, and for storing in said data storage means, of an assessment of said patient based upon said subjective information and said objective information;

prompting on said display means for user entry via said input means, and for storing in said data storage means, of a plan to follow based on said assessment;

prompting on said display means for user entry via said input means, and for storing in said data storage means, of a first reason for the assessment and the plan, a first action in response to the assessment and the plan, and a first result based on the first action;

prompting on said display means for user entry via said input means, and for storing in said data storage means, of a second reason for the assessment and the plan, a second action in response to the assessment and the plan, and a second result based on the second action; and

associating the stored first reason, first action and first result and the stored second reason, second action and second result with the stored subjective information, objective information, assessment and plan, such that a plurality of reasons, actions and results are associated with the stored subjective information, objective information, assessment and plan for a patient.

2. The computer based pharmaceutical care cognitive services management method of Claim 1 further comprising the steps of:

generating a first billing statement for said patient based on the stored first reason, first action and first result; and

generating a second billing statement for said patient based on the stored second reason, second action and second result;

such that two billing statements are generated for one patient based on the stored subjective information, objective information, assessment and plan.

3. The computer based pharmaceutical care cognitive services management method of Claim 1 further comprising the steps of:

prompting on said display means for user entry via said input means, and for storing in said data storage means, of a third reason for the assessment and the plan, a third action in response to the assessment and the plan, and a third result based on the third action;

associating the stored third reason, third action and third result with the stored first reason, first action and first result, the stored second reason, second action and second result, and the stored subjective information, objective information, assessment and plan, such that the stored first reason, first action and first result, the stored second reason, second action and second result and the stored third reason, third action and third result are each associated with the stored subjective information, objective information, assessment and plan for a patient.

4. The computer based pharmaceutical care cognitive services management method of Claim 3 further comprising the step of:

generating a third billing statement for said patient based on the stored third reason, third action and third result;

such that a third billing statement is generated for one patient based on the stored subjective information, objective information, assessment and plan.

5. The computer based pharmaceutical care cognitive services management method of Claim 1 further comprising the steps of:

prompting on said display means for user entry via said input means, and for storing in said data storage means, of an identification of a drug; and

associating the identification of the drug stored in said data storage means with the identity of said patient stored in said data storage means.

6. The computer based pharmaceutical care cognitive services management method of Claim 5 further comprising the steps of:

comparing the identification of the drug stored in said data storage means and the identity and history information corresponding to said patient stored in said data storage means; and

prompting for user entry via said input means, and for storing in said data storage means, of alteration of said identification of said drug based on the result of said comparing step, and said stored subjective information, objective information, assessment and plan;

such that the identification of said drug is changed by said user.

7. The computer based pharmaceutical care cognitive services management method of Claim 5 further comprising the step of:

transferring the identification of the drug in association with the identity of said patient to a dispensing system;

such that said drug is dispensed to said patient.

8. The computer based pharmaceutical care cognitive services management method of Claim 5 further comprising the steps of:

generating a billing statement for said patient based on the identification of the drug stored in said storage means;

such that a billing statement is generated for said patient based on the stored subjective information, objective information, assessment and plan.

9. The computer based pharmaceutical care cognitive services management method of Claim 1 further comprising the step of generating a report for said patient based on said stored subjective information, objective information, assessment and plan, said stored first reason, first action and first result, and said stored second reason, second action and second result.

10. A computer based pharmaceutical care cognitive services management method which executes on a computer system including processing means, data storage means, display means and input means, said computer based pharmaceutical care cognitive services management method comprising the steps of:

prompting on said display means for user entry via said input means, and for storing in said data storage means, of identity and history information corresponding to a patient;

prompting on said display means for user entry via said input means, and for storing in said data storage means, of an identification of a drug;

associating the identification of the drug stored in said data storage means with the identity of said patient stored in said data storage means;

comparing the identification of the drug stored in said data storage means and the identity and history information corresponding to said patient stored in said data storage means, to produce an indication of possible incompatibilities between said drug and said patient;

prompting on said display means for user entry via said input means of alteration of said identification of said drug based on the indications of the possible incompatibilities between said drug and said patient resulting from said comparing step;

suspending said step of prompting on said display means for user entry via said input means of alteration of said identification of said drug based on the indications of the possible incompatibilities between said drug and said patient resulting from said comparing step, in response to a user interrupt;

displaying on said display means information concerning a second patient in response to the user interrupt; and

resuming said step of prompting for user entry via said input means of alteration of said identification of said drug, in response to completion of said step of displaying on said display means information concerning the second patient.

11. The computer based pharmaceutical care cognitive services management method of Claim 10 further comprising the steps of:

prompting on said display means for user entry via said input means of results of a counseling session with said patient concerning the identification of said drug and the results of said comparing step;

suspending said step of prompting for user entry via said input means of results of a counseling session with said patient concerning the identification of said drug and the results of said comparing step, in response to a user interrupt;

displaying on said display means information concerning a third patient in response to a user interrupt; and

resuming said step of prompting for user entry via said input means of results of a counseling session with said patient concerning the identification of said drug and the results of said comparing step.

12. The computer based pharmaceutical care cognitive services management method of Claim 10 wherein the following steps are performed between said step of displaying information concerning a second patient in response to a user interrupt and said resuming step:

displaying on said display means a list of patient identities;

receiving a user selection of a patient name entered by a user via said input means; and

comparing the patient name selected by the user with the list of patient identities, to produce an indication that the patient name selected by the user is the same as one of the patient names contained in the list of patient identities.

13. The computer based pharmaceutical care cognitive services management method of Claim 12 wherein said step of comparing the patient name with the list of patient identities is followed by the steps of:

enabling a user selection to display on said display means at least a portion of the identity and history information for the patient name selected by the user in response to an indication that the patient name selected by the user is the same as one of the patient names contained in the list of patient identities;

receiving a user selection to display on said display means at least a portion of the identity and history information for the patient name selected by the user; and

displaying on said display device at least a portion of the identity and history information for the patient name selected by the user in response to the step of receiving a user selection to display on said display means at least a portion of the identity and history information for the patient name selected by the user.

14. The computer based pharmaceutical care cognitive services management method of Claim 12 wherein said step of comparing the patient name with the list of patient identities is followed by the steps of:

enabling a user selection to display on said display means a prompt for user entry via said input means of an identification of a drug in response to an indication that the patient name selected by the user is the same as one of the patient names contained in the list of patient identities;

receiving a user selection to display on said display means a prompt for user entry via said input means of an identification of a drug; and

displaying on said display means a prompt for user entry via said input means of an identification of a drug in response to the step of receiving a user selection to display on said display means a prompt for user entry via said input means of an identification of a drug.

15. The computer based pharmaceutical care cognitive services management method of Claim 12 wherein said step of comparing the patient name with the list of patient identities is followed by the steps of:

enabling a user selection to display on said display means the patient name selected by the user in response to an indication that the patient name selected by the user is not the same as one of the patient names contained in the list of patient identities;

receiving a user selection to display on said display means the patient name selected by the user; and

displaying on said display device the patient name selected by the user in response to the step of receiving a user selection to display on said display means the patient name selected by the user; and

prompting on said display means for user entry via said input means, and for storing in said data storage means, of identity and history information corresponding to the patient name selected by the user.

16. The computer based pharmaceutical care cognitive services management method of Claim 10 further comprising the steps of:

prompting on said display means for user entry via said input means of a second identification of a drug in response to the user interrupt;

receiving user entry via said input means of the second identification of a drug; and

comparing the second identification of a drug received via said input means with the identification of a drug stored in said data storage means, to produce an indication that the second identification of a drug is the same as the identification of the drug stored in said data storage means.

17. The computer based pharmaceutical care cognitive services management method of Claim 16 wherein said step of comparing the second identification of a drug with the identification of a drug stored in said data storage means is followed by the steps of:

enabling a user selection to display on said display means the identification of a drug and at least a portion of the identity and history information of the patient associated with the identification of the drug in

response to an indication that the second identification of a drug is the same as the identification of the drug stored in said data storage means;

receiving a user selection to display on said display means the identification of a drug and at least a portion of the identity and history information of the patient associated with the identification of the drug; and

displaying on said display means the identification of a drug and at least a portion of the identity and history information of the patient associated with the identification of the drug in response to the step of receiving a user selection to display on said display means the identification of a drug and at least a portion of the identity and history information of the patient associated with the identification of the drug.

18. The computer based pharmaceutical care cognitive services management method of Claim 16 wherein said step of comparing the second identification of a drug with the identification of a drug stored in said data storage means is followed by the steps of:

enabling user selection to display on said display means a list of patient identities;

receiving user selection to display on said display means a list of patient identities;

displaying on said display means a list of patient identities in response to the step of receiving user selection to display a list of patient identities;

receiving user selection of a patient name entered by a user via said input means; and

comparing the patient name selected by the user with the list of patient identities, to produce an indication that the patient name selected by the user is the same as one of the patient names contained in the list of patient identities.

19. A computer based pharmaceutical care cognitive services management system comprising:

a computer system including processing means, data storage means, display means and input means;

first prompting means, for prompting on said display means for user entry via said input means, and for storing in said data storage means, of identity and history information corresponding to a patient;

second prompting means, for prompting on said display means for user entry via said input means, and for storing in said data storage means, of subjective information relating to assessed characteristics of said patient and objective information relating to said patient's history of drug use;

third prompting means, for prompting on said display means for user entry via said input means, and for storing in said data storage means, of an assessment of said patient based upon said subjective information and said objective information;

fourth prompting means, for prompting on said display means for user entry via said input means, and for storing in said data storage means, of a plan to follow based on said assessment;

fifth prompting means, for prompting on said display means for user entry via said input means, and for storing in said data storage means, of a first reason for the assessment and the plan, a first action in response to the assessment and the plan, and a first result based on the first action;

sixth prompting means, for prompting on said display means for user entry via said input means, and for storing in said data storage means, of a second reason for the assessment and the plan, a second action in response to the assessment and the plan, and a second result based on the second action; and

associating means, for associating the stored first reason, first action and first result and the stored second reason, second action and second result with the stored subjective information, objective information, assessment and plan, such that a plurality of reasons, actions and results are associated with the stored subjective information, objective information, assessment and plan for said patient.

20. The computer based pharmaceutical care cognitive services management system of Claim 19 further comprising:

first generating means, for generating a first billing statement for said patient based on the stored first reason, first action and first result; and

second generating means, for generating a second billing statement for said patient based on the stored second reason, second action and second result;

such that two billing statements are generated for said patient based on the stored subjective information, objective information, assessment and plan.

21. The computer based pharmaceutical care cognitive services management system of Claim 19 further comprising:

seventh prompting means, for prompting on said display means for user entry via said input means, and for storing in said data storage means, of an identification of a drug; and

second associating means, for associating the identification of the drug stored in said data storage means with the identity of said patient stored in said data storage means.

22. The computer based pharmaceutical care cognitive services management system of Claim 21 further comprising:

comparing means, for comparing the identification of the drug stored in said data storage means and the identify and history information corresponding to said patient stored in said data storage means to produce an indication of possible incompatibilities between said drug and said patient; and

eighth prompting means, for prompting for user entry via said input means, and for storing in said data storage means, of alteration of said identification of said drug based on the indication of possible incompatibilities, and said stored subjective information, objective information, assessment and plan;

such that the identification of said drug is changed by said user.

23. The computer based pharmaceutical care cognitive services management system of Claim 21 further comprising:

a dispensing system; and

transferring means, for transferring the identification of the drug in association with the identity of said patient to said dispensing system;

such that said drug is dispensed to said patient.

24. The computer based pharmaceutical care cognitive services management system of Claim 21 further comprising:

generating means, for generating a billing statement for said patient based on the identification of the drug stored in said storage means;

such that a billing statement is generated for said patient based on the stored subjective information, objective information, assessment and plan.

25. A computer based pharmaceutical care cognitive services management system comprising:

a computer system including processing means, data storage means, display means and input means;

first prompting means, for prompting on said display means for user entry via said input means, andfor storing in said data storage means, of identity and history information corresponding to a patient;

second prompting means, for prompting on said display means for user entry via said input means, and for storing in said data storage means, of an identification of a drug;

associating means, for associating the identification of the drug stored in said data storage means with the identity of said patient stored in said data storage means;

comparing means, for comparing the identification of the drug stored in said data storage means and the identify and history information corresponding to said patient stored in said data storage means, to produce an indication of possible incompatibilities between said drug and said patient;

third prompting means, for prompting on said display means for user entry via said input means of alteration of said identification of said drug based on the indications of the possible incompatibilities between said drug and said patient resulting from said comparing step;

suspending means, for suspending processing by said third prompting means, prompting for user entry of alteration of said identification of said drug in response to a user interrupt;

displaying means, for displaying on said display means information concerning a second patient in response to the user interrupt; and

resuming means, for resuming processing by said third prompting means, prompting for user entry via said input means of alteration of said identification of said drug, in response to completion of processing by said displaying means for displaying information concerning the second patient.

26. The computer based pharmaceutical care cognitive services management system of Claim 25 further comprising:

fourth prompting means, for prompting on said display means for user entry via said input means of results of a counseling session with said patient concerning the identification of said drug and the indication of possible incompatibilities between said drug and said patient;

second suspending means, for suspending processing by said fourth prompting means, for prompting for user entry of results of a counseling session with said patient in response to a user interrupt;

second displaying means, for displaying on said display means information concerning a third patient in response to a user interrupt; and

second resuming means, for resuming processing by said fourth prompting means, for prompting for user entry of results of a counseling session with said patient concerning the identification of said drug and the indication of possible incompatibilities between said drug and said patient.

27. The computer based pharmaceutical care cognitive services management system of Claim 25 further comprising:

second displaying means, for displaying on said display means a list of patient identities;

receiving means, for receiving a user selection of a patient name entered by a user via said input means; and

second comparing means, for comparing the patient name selected by the user with the list of patient identities, to produce an indication that the patient name selected by the user is the same as one of the patient names contained in the list of patient identities.

28. The computer based pharmaceutical care cognitive services management system of Claim 27:

enabling means, for enabling a user selection to display on said display means at least a portion of the identity and history information for the patient name selected by the user in response to an indication that the patient name selected by the user is the same as one of the patient names contained in the list of patient identities;

second receiving means, for receiving a user selection to display on said display means at least a portion of the identity and history information for the patient name selected by the user; and

third displaying means, for displaying on said display device at least a portion of the identity and history information for the patient name selected by the user in response to the user selection to display on said display means at least a portion of the identity and history information for the patient name selected by the user received by said second receiving means.

29. The computer based pharmaceutical care cognitive services management system of Claim 27 further comprising:

enabling means, for enabling a user selection to display on said display means a prompt for user entry via said input means of an identification of a drug in response to an indication that the patient name selected by the user is the same as one of the patient names contained in the list of patient identities;

second receiving means, for receiving a user selection to display on said display means a prompt for user entry via said input means of an identification of a drug; and

third displaying means, for displaying on said display means a prompt for user entry via said input means of an identification of a drug in response to the user selection to display on said display means a prompt for user entry via said input means of an identification of a drug received by said second receiving means.

30. The computer based pharmaceutical care cognitive services management method of Claim 27 further comprising:

enabling means, for enabling a user selection to display on said display means the patient name selected by the user in response to an indication that the patient name selected by the user is not the same as one of the patient names contained in the list of patient identities;

second receiving means, for receiving a user selection to display on said display means the patient name selected by the user; and

third displaying means, for displaying on said display device the patient name selected by the user in response to the user selection to display on said display means the patient name selected by the user received by said second receiving means; and

fourth prompting means, for prompting on said display means for user entry via said input means, and for storing in said data storage means, of identity and history information corresponding to the patient name selected by the user.

31. The computer based pharmaceutical care cognitive services management system of Claim 25 further comprising:

fourth prompting means, for prompting on said display means for user entry via said input means of a second identification of a drug in response to the user interrupt;

second receiving means, for receiving user entry via said input means of the second identification of a drug; and

second comparing means, for comparing the second identification of a drug received via said input means with the identification of a drug stored in said data storage means, to produce an indication that the second identification of a drug is the same as the identification of the drug stored in said data storage means.

32. The computer based pharmaceutical care cognitive services management system of Claim 31 further comprising:

enabling means, for enabling a user selection to display on said display means the identification of a drug and at least a portion of the identity and history information of the patient associated with the identification of the drug in response to an indication that the second identification of a drug is the same as the identification of the drug stored in said data storage means;

third receiving means, for receiving a user selection to display on said display means the identification of a drug and at least a portion of the identity and history information of the patient associated with the identification of the drug; and

second displaying means, for displaying on said display means the identification of a drug and at least a portion of the identity and history information of the patient associated with the identification of the drug in response to the user selection, received by said third receiving means, to display on said display means the identification of a drug and at least a portion of the identity and history information of the patient associated with the identification of the drug.

33. The computer based pharmaceutical care cognitive services management system of Claim 31 further comprising:

enabling means, for enabling user selection to display on said display means a list of patient identities;

third receiving means, for receiving user selection to display on said display means a list of patient identities;

second displaying means, for displaying on said display means a list of patient identities in response to the user selection to display a list of patient identities received by said third receiving means;

fourth receiving means, for receiving user selection of a patient name entered by a user via said input means; and

third comparing means, for comparing the patient name selected by the user with the list of patient identities, to produce an indication that the

patient name selected by the user is the same as one of the patient names contained in the list of patient identities.

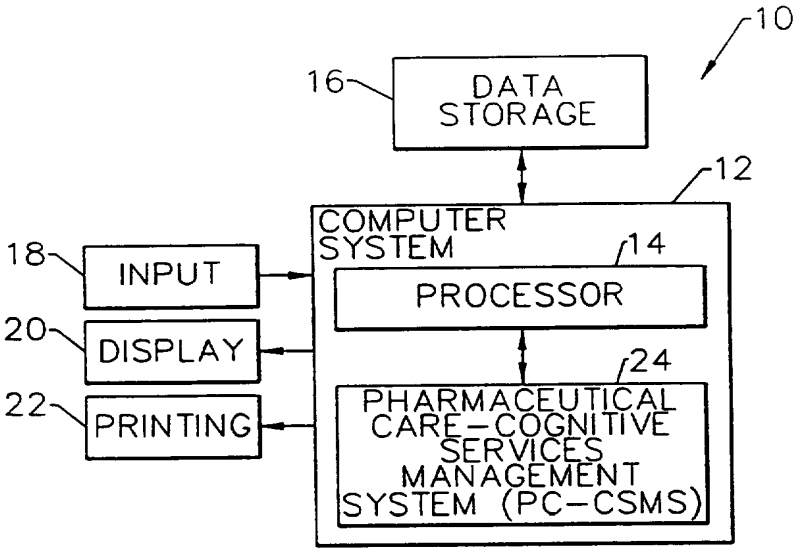

10
16
DATA STORAGE
12
COMPUTER SYSTEM
14
PROCESSOR
24
PHARMACEUTICAL CARE-COGNITIVE SERVICES MANAGEMENT SYSTEM (PC-CSMS)
18
INPUT
20
DISPLAY
22
PRINTING

FIG. 1.

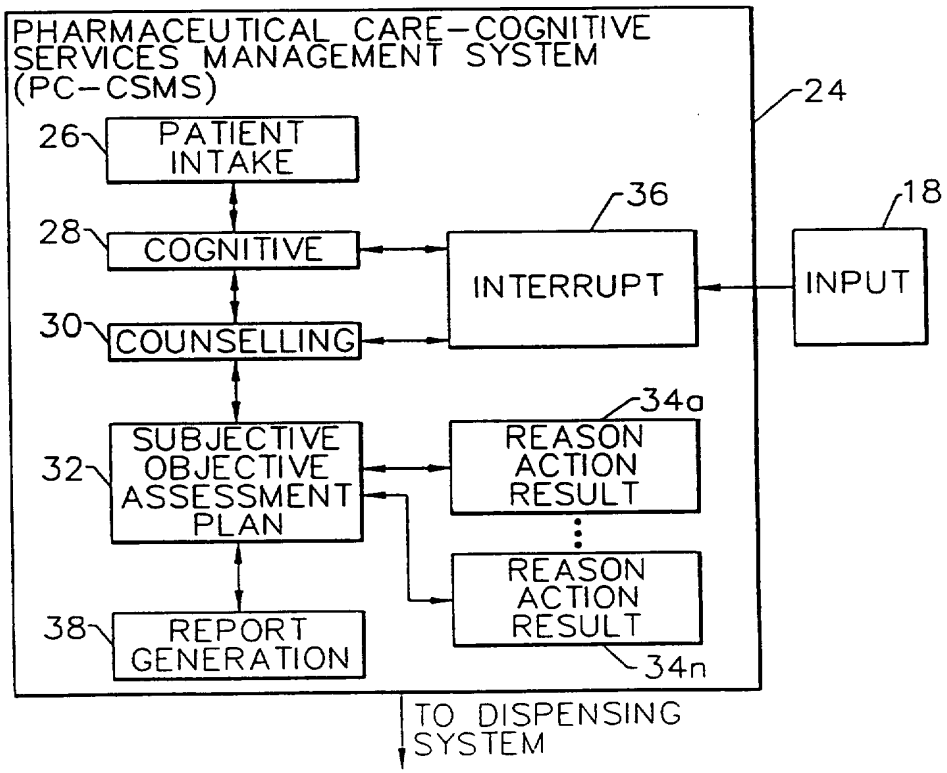

PHARMACEUTICAL CARE-COGNITIVE SERVICES MANAGEMENT SYSTEM (PC-CSMS)
24
26
PATIENT INTAKE
28
COGNITIVE
30
COUNSELLING
32
SUBJECTIVE OBJECTIVE ASSESSMENT PLAN
38
REPORT GENERATION
36
INTERRUPT
18
INPUT
34a
REASON ACTION RESULT
REASON ACTION RESULT
34n
TO DISPENSING SYSTEM

FIG. 2.

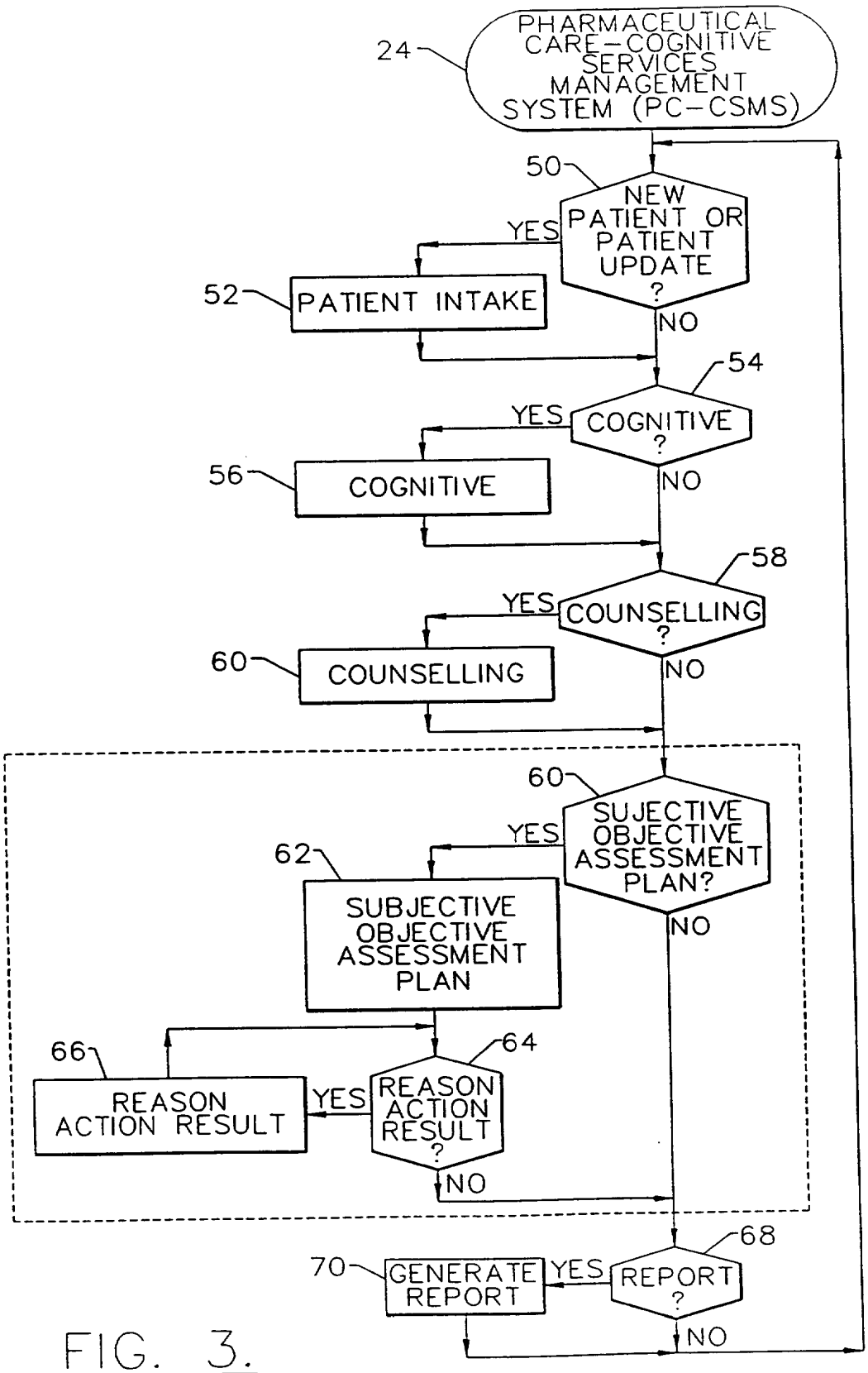

24
PHARMACEUTICAL CARE-COGNITIVE SERVICES MANAGEMENT SYSTEM (PC-CSMS)
50
NEW PATIENT OR PATIENT UPDATE ?
YES
NO
52
PATIENT INTAKE
54
COGNITIVE ?
YES
NO
56
COGNITIVE
58
COUNSELLING ?
YES
NO
60
COUNSELLING
60
SUJECTIVE OBJECTIVE ASSESSMENT PLAN?
YES
NO
62
SUBJECTIVE OBJECTIVE ASSESSMENT PLAN
64
REASON ACTION RESULT ?
YES
NO
66
REASON ACTION RESULT
68
REPORT ?
YES
NO
70
GENERATE REPORT

FIG. 3.

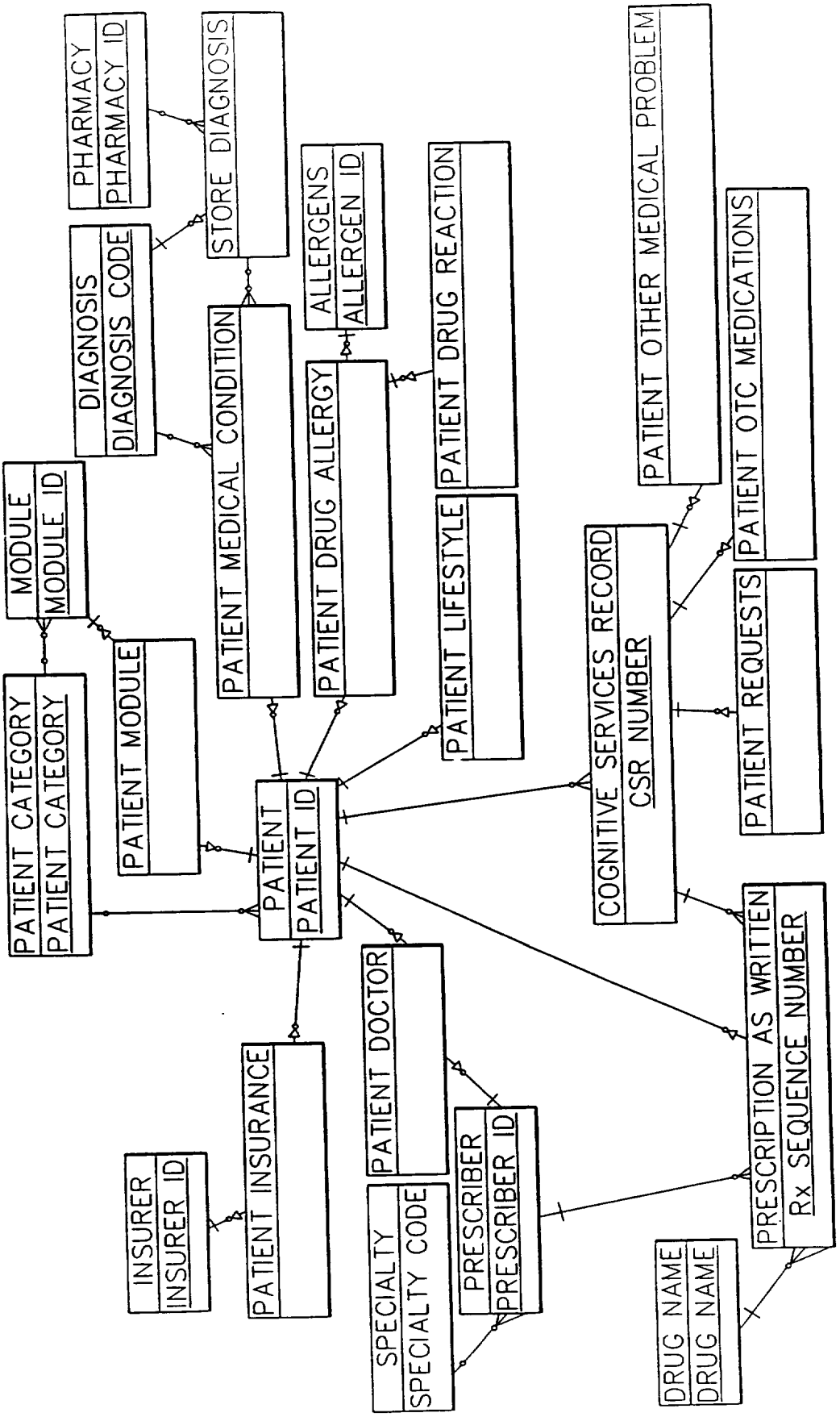

PHARMACY
PHARMACY ID
STORE DIAGNOSIS
DIAGNOSIS
DIAGNOSIS CODE
ALLERGENS
ALLERGEN ID
PATIENT OTHER MEDICAL PROBLEM
MODULE
MODULE ID
PATIENT MEDICAL CONDITION
PATIENT DRUG ALLERGY
PATIENT DRUG REACTION
PATIENT OTC MEDICATIONS
PATIENT CATEGORY
PATIENT CATEGORY
PATIENT MODULE
PATIENT LIFESTYLE
COGNITIVE SERVICES RECORD
CSR NUMBER
PATIENT REQUESTS
PATIENT
PATIENT ID
PRESCRIPTION AS WRITTEN
Rx SEQUENCE NUMBER
PATIENT DOCTOR
INSURER
INSURER ID
PATIENT INSURANCE
PRESCRIBER
PRESCRIBER ID
SPECIALTY
SPECIALTY CODE
DRUG NAME
DRUG NAME

FIG. 4A.

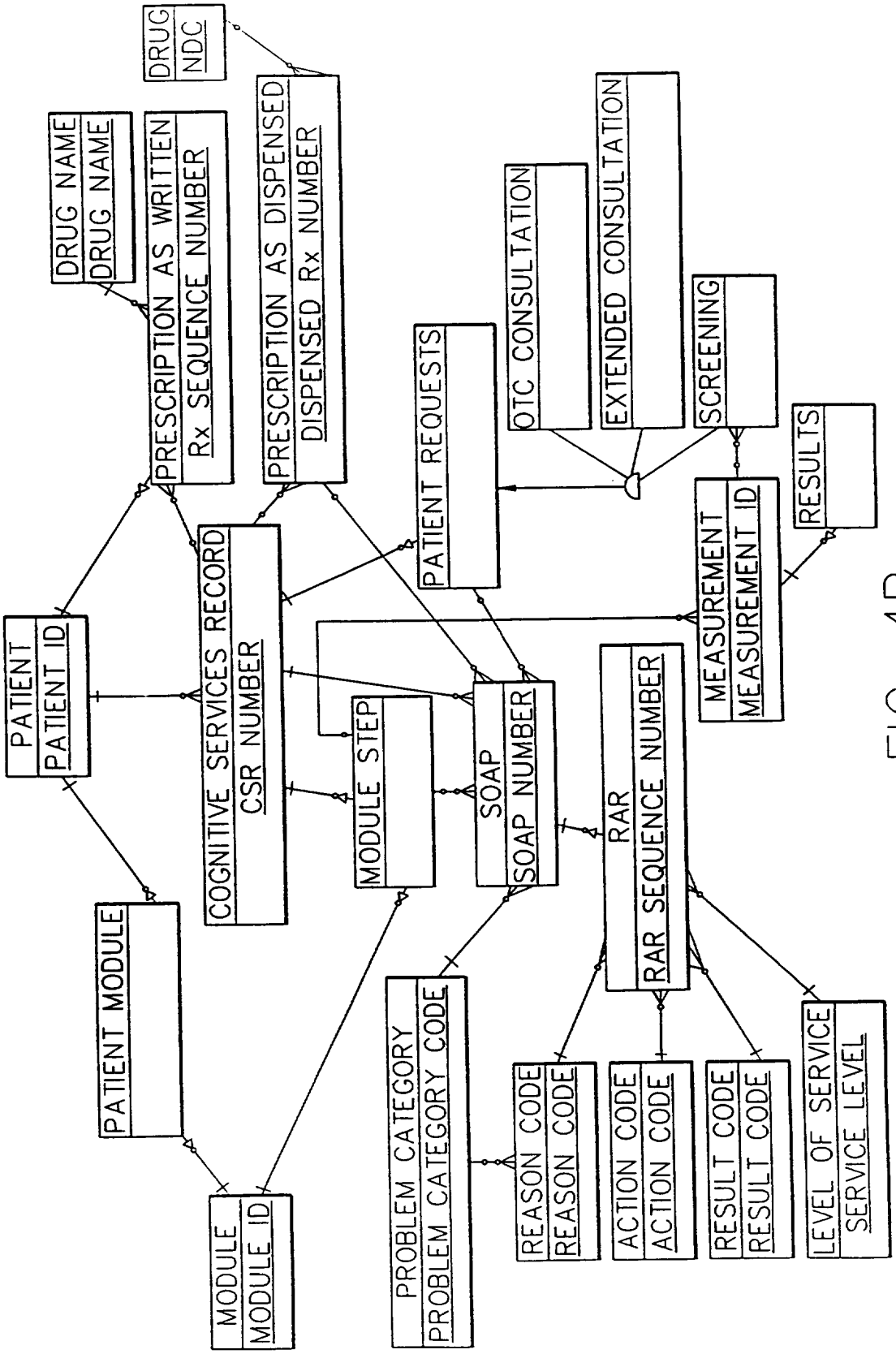

DRUG
NDC
DRUG NAME
DRUG NAME
PRESCRIPTION AS WRITTEN
Rx SEQUENCE NUMBER
PRESCRIPTION AS DISPENSED
DISPENSED Rx NUMBER
OTC CONSULTATION
EXTENDED CONSULTATION
SCREENING
PATIENT REQUESTS
RESULTS
MEASUREMENT
MEASUREMENT ID
PATIENT
PATIENT ID
COGNITIVE SERVICES RECORD
CSR NUMBER
MODULE STEP
SOAP
SOAP NUMBER
RAR
RAR SEQUENCE NUMBER
PATIENT MODULE
MODULE
MODULE ID
PROBLEM CATEGORY
PROBLEM CATEGORY CODE
REASON CODE
REASON CODE
ACTION CODE
ACTION CODE
RESULT CODE
RESULT CODE
LEVEL OF SERVICE
SERVICE LEVEL

FIG. 4B.

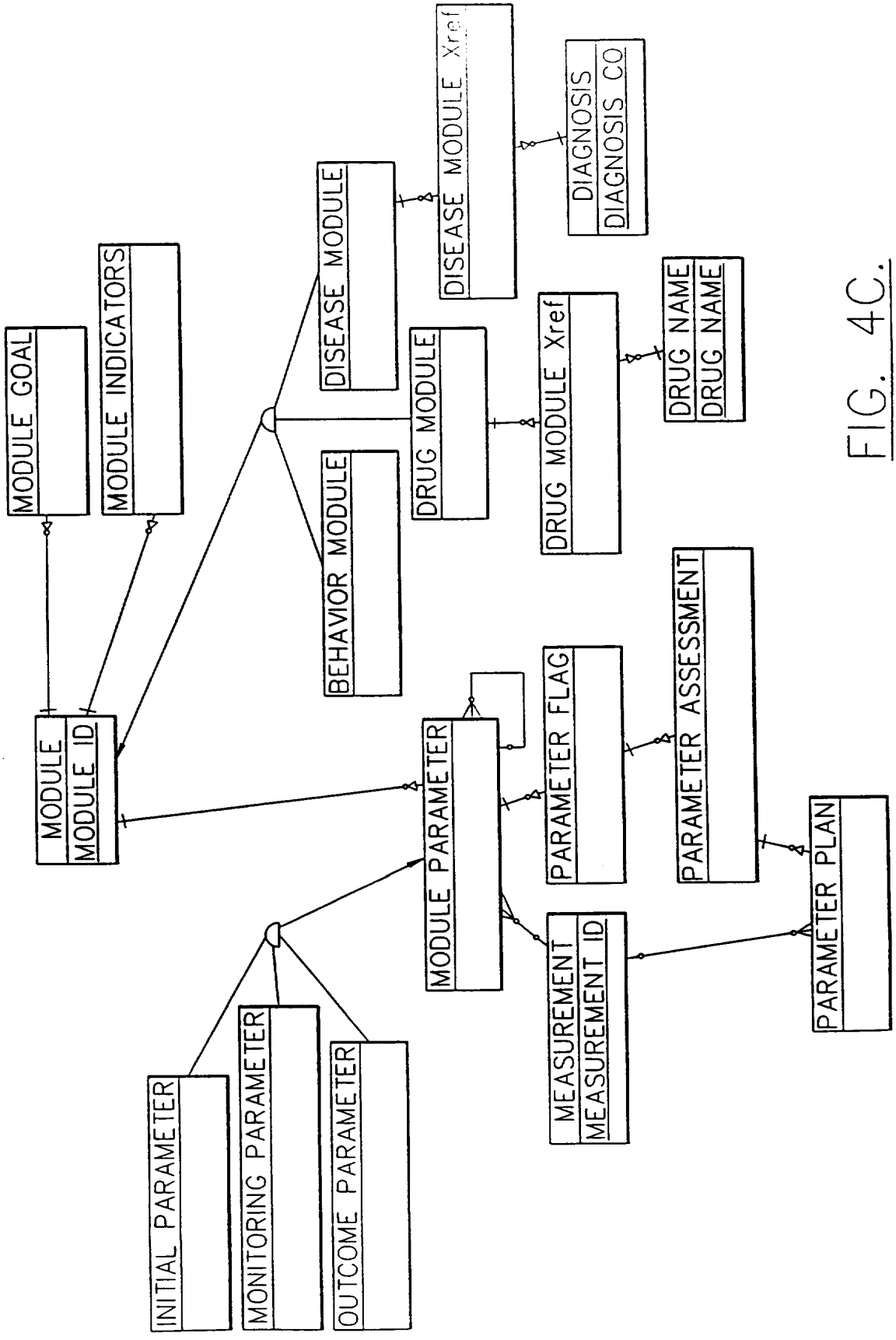

MODULE GOAL
MODULE INDICATORS
DISEASE MODULE
DISEASE MODULE Xref
DIAGNOSIS
DIAGNOSIS CO
DRUG MODULE
DRUG MODULE Xref
DRUG NAME
DRUG NAME
BEHAVIOR MODULE
MODULE
MODULE ID
MODULE PARAMETER
PARAMETER FLAG
PARAMETER ASSESSMENT
PARAMETER PLAN
MEASUREMENT
MEASUREMENT ID
INITIAL PARAMETER
MONITORING PARAMETER
OUTCOME PARAMETER

FIG. 4C.

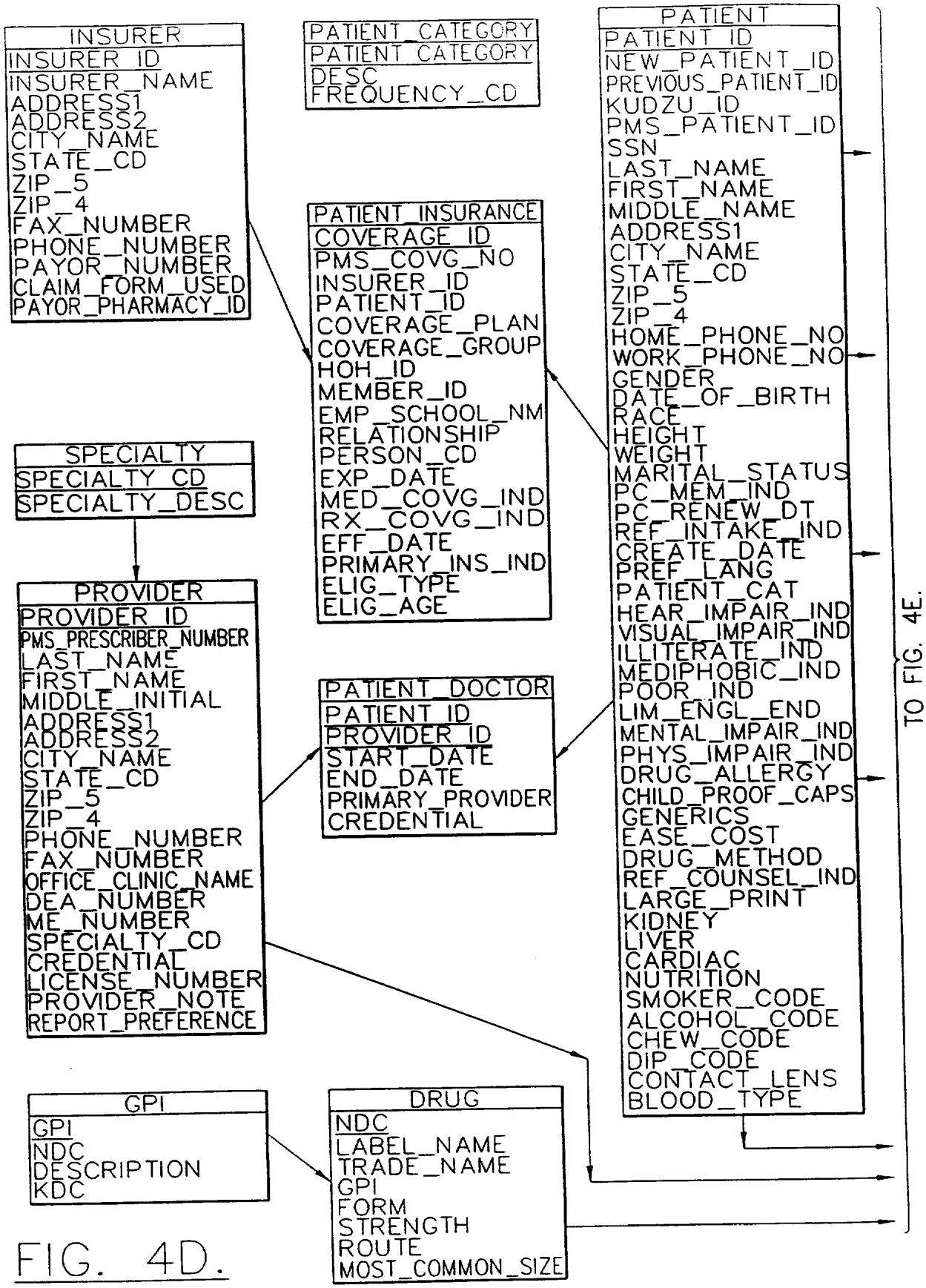

INSURER
INSURER_ID
INSURER_NAME
ADDRESS1
ADDRESS2
CITY_NAME
STATE_CD
ZIP_5
ZIP_4
FAX_NUMBER
PHONE_NUMBER
PAYOR_NUMBER
CLAIM_FORM_USED
PAYOR_PHARMACY_ID
PATIENT_CATEGORY
PATIENT_CATEGORY
DESC
FREQUENCY_CD
PATIENT
PATIENT_ID
NEW_PATIENT_ID
PREVIOUS_PATIENT_ID
KUDZU_ID
PMS_PATIENT_ID
SSN
LAST_NAME
FIRST_NAME
MIDDLE_NAME
ADDRESS1
CITY_NAME
STATE_CD
ZIP_5
ZIP_4
HOME_PHONE_NO
WORK_PHONE_NO
GENDER
DATE_OF_BIRTH
RACE
HEIGHT
WEIGHT
MARITAL_STATUS
PC_MEM_IND
PC_RENEW_DT
REF_INTAKE_IND
CREATE_DATE
PREF_LANG
PATIENT_CAT
HEAR_IMPAIR_IND
VISUAL_IMPAIR_IND
ILLITERATE_IND
MEDIPHOBIC_IND
POOR_IND
LIM_ENGL_END
MENTAL_IMPAIR_IND
PHYS_IMPAIR_IND
DRUG_ALLERGY
CHILD_PROOF_CAPS
GENERICS
EASE_COST
DRUG_METHOD
REF_COUNSEL_IND
LARGE_PRINT
KIDNEY
LIVER
CARDIAC
NUTRITION
SMOKER_CODE
ALCOHOL_CODE
CHEW_CODE
DIP_CODE
CONTACT_LENS
BLOOD_TYPE
PATIENT_INSURANCE
COVERAGE_ID
PMS_COVG_NO
INSURER_ID
PATIENT_ID
COVERAGE_PLAN
COVERAGE_GROUP
HOH_ID
MEMBER_ID
EMP_SCHOOL_NM
RELATIONSHIP
PERSON_CD
EXP_DATE
MED_COVG_IND
RX_COVG_IND
EFF_DATE
PRIMARY_INS_IND
ELIG_TYPE
ELIG_AGE
SPECIALTY
SPECIALTY_CD
SPECIALTY_DESC
PROVIDER
PROVIDER_ID
PMS_PRESCRIBER_NUMBER
LAST_NAME
FIRST_NAME
MIDDLE_INITIAL
ADDRESS1
ADDRESS2
CITY_NAME
STATE_CD
ZIP_5
ZIP_4
PHONE_NUMBER
FAX_NUMBER
OFFICE_CLINIC_NAME
DEA_NUMBER
ME_NUMBER
SPECIALTY_CD
CREDENTIAL
LICENSE_NUMBER
PROVIDER_NOTE
REPORT_PREFERENCE
PATIENT_DOCTOR
PATIENT_ID
PROVIDER_ID
START_DATE
END_DATE
PRIMARY_PROVIDER
CREDENTIAL
GPI
GPI
NDC
DESCRIPTION
KDC
DRUG
NDC
LABEL_NAME
TRADE_NAME
GPI
FORM
STRENGTH
ROUTE
MOST_COMMON_SIZE
TO FIG. 4E.

FIG. 4D.

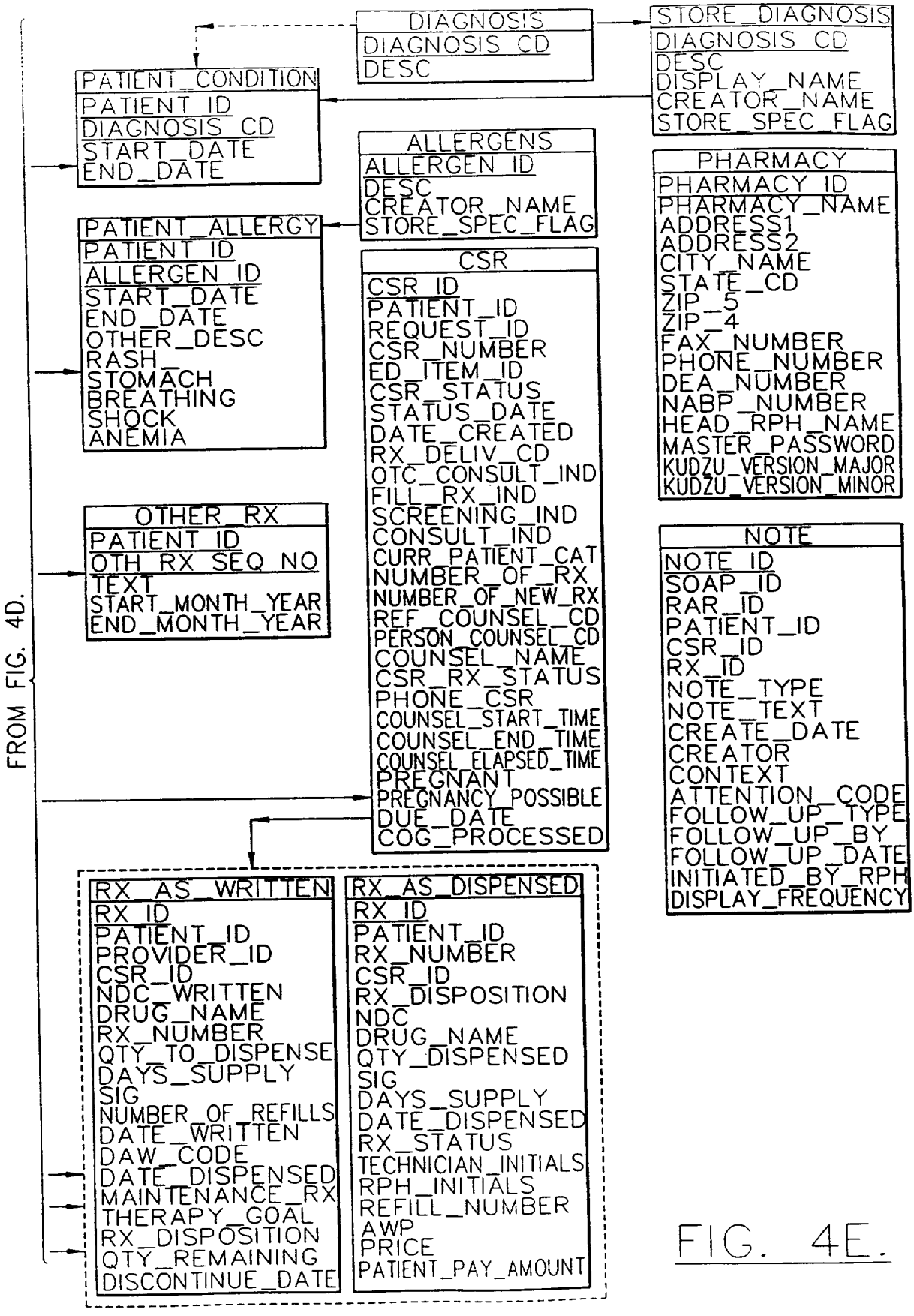

FROM FIG. 4D.
DIAGNOSIS
DIAGNOSIS_CD
DESC
STORE_DIAGNOSIS
DIAGNOSIS_CD
DESC
DISPLAY_NAME
CREATOR_NAME
STORE_SPEC_FLAG
PATIENT_CONDITION
PATIENT_ID
DIAGNOSIS_CD
START_DATE
END_DATE
ALLERGENS
ALLERGEN_ID
DESC
CREATOR_NAME
STORE_SPEC_FLAG
PHARMACY
PHARMACY_ID
PHARMACY_NAME
ADDRESS1
ADDRESS2
CITY_NAME
STATE_CD
ZIP_5
ZIP_4
FAX_NUMBER
PHONE_NUMBER
DEA_NUMBER
NABP_NUMBER
HEAD_RPH_NAME
MASTER_PASSWORD
KUDZU_VERSION_MAJOR
KUDZU_VERSION_MINOR
PATIENT_ALLERGY
PATIENT_ID
ALLERGEN_ID
START_DATE
END_DATE
OTHER_DESC
RASH_
STOMACH
BREATHING
SHOCK
ANEMIA
CSR
CSR_ID
PATIENT_ID
REQUEST_ID
CSR_NUMBER
ED_ITEM_ID
CSR_STATUS
STATUS_DATE
DATE_CREATED
RX_DELIV_CD
OTC_CONSULT_IND
FILL_RX_IND
SCREENING_IND
CONSULT_IND
CURR_PATIENT_CAT
NUMBER_OF_RX
NUMBER_OF_NEW_RX
REF_COUNSEL_CD
PERSON_COUNSEL_CD
COUNSEL_NAME
CSR_RX_STATUS
PHONE_CSR
COUNSEL_START_TIME
COUNSEL_END_TIME
COUNSEL_ELAPSED_TIME
PREGNANT
PREGNANCY_POSSIBLE
DUE_DATE
COG_PROCESSED
OTHER_RX
PATIENT_ID
OTH_RX_SEQ_NO
TEXT
START_MONTH_YEAR
END_MONTH_YEAR
NOTE
NOTE_ID
SOAP_ID
RAR_ID
PATIENT_ID
CSR_ID
RX_ID
NOTE_TYPE
NOTE_TEXT
CREATE_DATE
CREATOR
CONTEXT
ATTENTION_CODE
FOLLOW_UP_TYPE
FOLLOW_UP_BY
FOLLOW_UP_DATE
INITIATED_BY_RPH
DISPLAY_FREQUENCY
RX_AS_WRITTEN
RX_ID
PATIENT_ID
PROVIDER_ID
CSR_ID
NDC_WRITTEN
DRUG_NAME
RX_NUMBER
QTY_TO_DISPENSE
DAYS_SUPPLY
SIG
NUMBER_OF_REFILLS
DATE_WRITTEN
DAW_CODE
DATE_DISPENSED
MAINTENANCE_RX
THERAPY_GOAL
RX_DISPOSITION
QTY_REMAINING
DISCONTINUE_DATE
RX_AS_DISPENSED
RX_ID
PATIENT_ID
RX_NUMBER
CSR_ID
RX_DISPOSITION
NDC
DRUG_NAME
QTY_DISPENSED
SIG
DAYS_SUPPLY
DATE_DISPENSED
RX_STATUS
TECHNICIAN_INITIALS
RPH_INITIALS
REFILL_NUMBER
AWP
PRICE
PATIENT_PAY_AMOUNT

FIG. 4E.

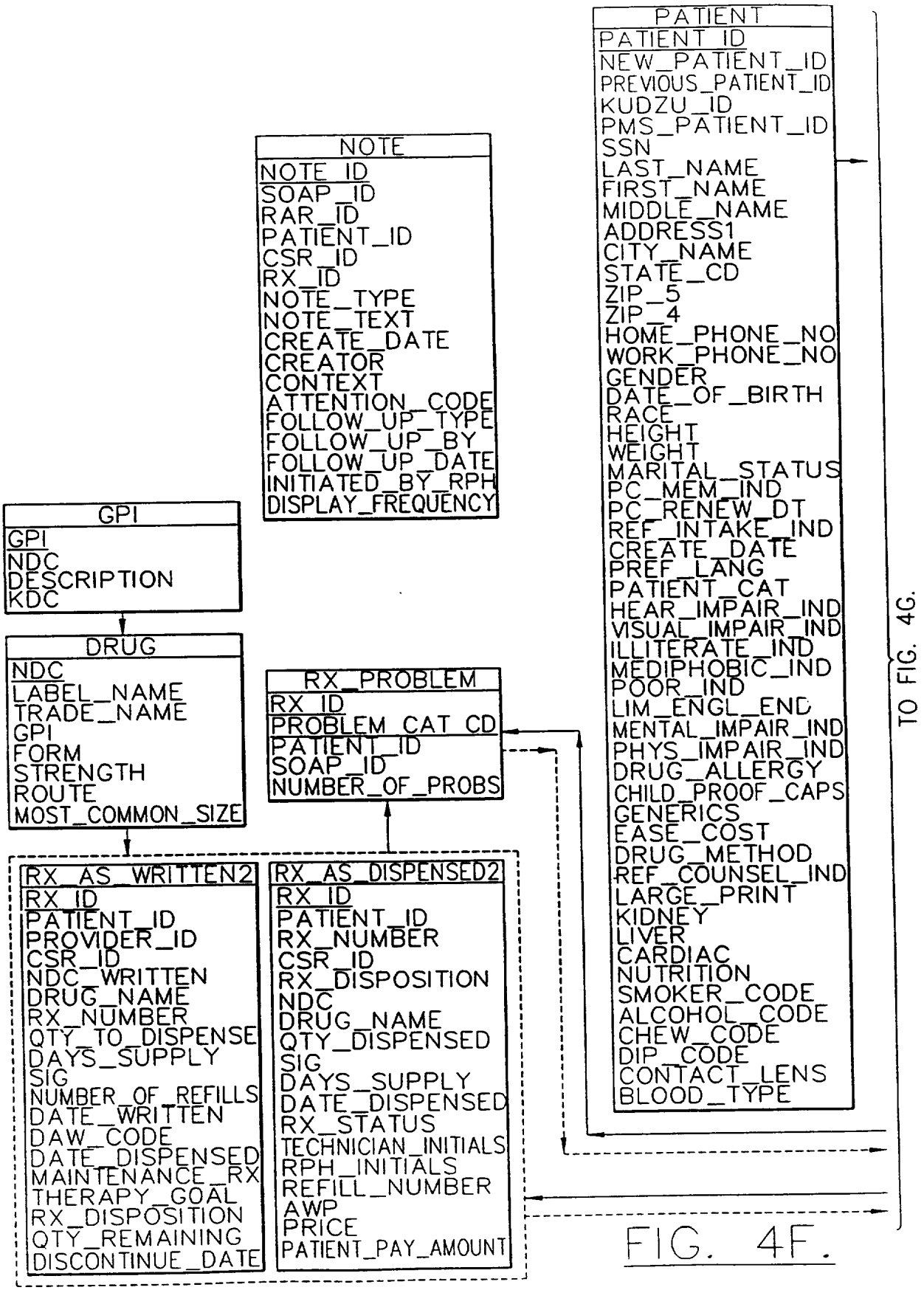

PATIENT
PATIENT_ID
NEW_PATIENT_ID
PREVIOUS_PATIENT_ID
KUDZU_ID
PMS_PATIENT_ID
SSN
LAST_NAME
FIRST_NAME
MIDDLE_NAME
ADDRESS1
CITY_NAME
STATE_CD
ZIP_5
ZIP_4
HOME_PHONE_NO
WORK_PHONE_NO
GENDER
DATE_OF_BIRTH
RACE
HEIGHT
WEIGHT
MARITAL_STATUS
PC_MEM_IND
PC_RENEW_DT
REF_INTAKE_IND
CREATE_DATE
PREF_LANG
PATIENT_CAT
HEAR_IMPAIR_IND
VISUAL_IMPAIR_IND
ILLITERATE_IND
MEDIPHOBIC_IND
POOR_IND
LIM_ENGL_END
MENTAL_IMPAIR_IND
PHYS_IMPAIR_IND
DRUG_ALLERGY
CHILD_PROOF_CAPS
GENERICS
EASE_COST
DRUG_METHOD
REF_COUNSEL_IND
LARGE_PRINT
KIDNEY
LIVER
CARDIAC
NUTRITION
SMOKER_CODE
ALCOHOL_CODE
CHEW_CODE
DIP_CODE
CONTACT_LENS
BLOOD_TYPE
NOTE
NOTE_ID
SOAP_ID
RAR_ID
PATIENT_ID
CSR_ID
RX_ID
NOTE_TYPE
NOTE_TEXT
CREATE_DATE
CREATOR
CONTEXT
ATTENTION_CODE
FOLLOW_UP_TYPE
FOLLOW_UP_BY
FOLLOW_UP_DATE
INITIATED_BY_RPH
DISPLAY_FREQUENCY
GPI
GPI
NDC
DESCRIPTION
KDC
DRUG
NDC
LABEL_NAME
TRADE_NAME
GPI
FORM
STRENGTH
ROUTE
MOST_COMMON_SIZE
RX_PROBLEM
RX_ID
PROBLEM_CAT_CD
PATIENT_ID
SOAP_ID
NUMBER_OF_PROBS
RX_AS_WRITTEN2
RX_ID
PATIENT_ID
PROVIDER_ID
CSR_ID
NDC_WRITTEN
DRUG_NAME
RX_NUMBER
QTY_TO_DISPENSE
DAYS_SUPPLY
SIG
NUMBER_OF_REFILLS
DATE_WRITTEN
DAW_CODE
DATE_DISPENSED
MAINTENANCE_RX
THERAPY_GOAL
RX_DISPOSITION
QTY_REMAINING
DISCONTINUE_DATE
RX_AS_DISPENSED2
RX_ID
PATIENT_ID
RX_NUMBER
CSR_ID
RX_DISPOSITION
NDC
DRUG_NAME
QTY_DISPENSED
SIG
DAYS_SUPPLY
DATE_DISPENSED
RX_STATUS
TECHNICIAN_INITIALS
RPH_INITIALS
REFILL_NUMBER
AWP
PRICE
PATIENT_PAY_AMOUNT
TO FIG. 4G.

FIG. 4F.

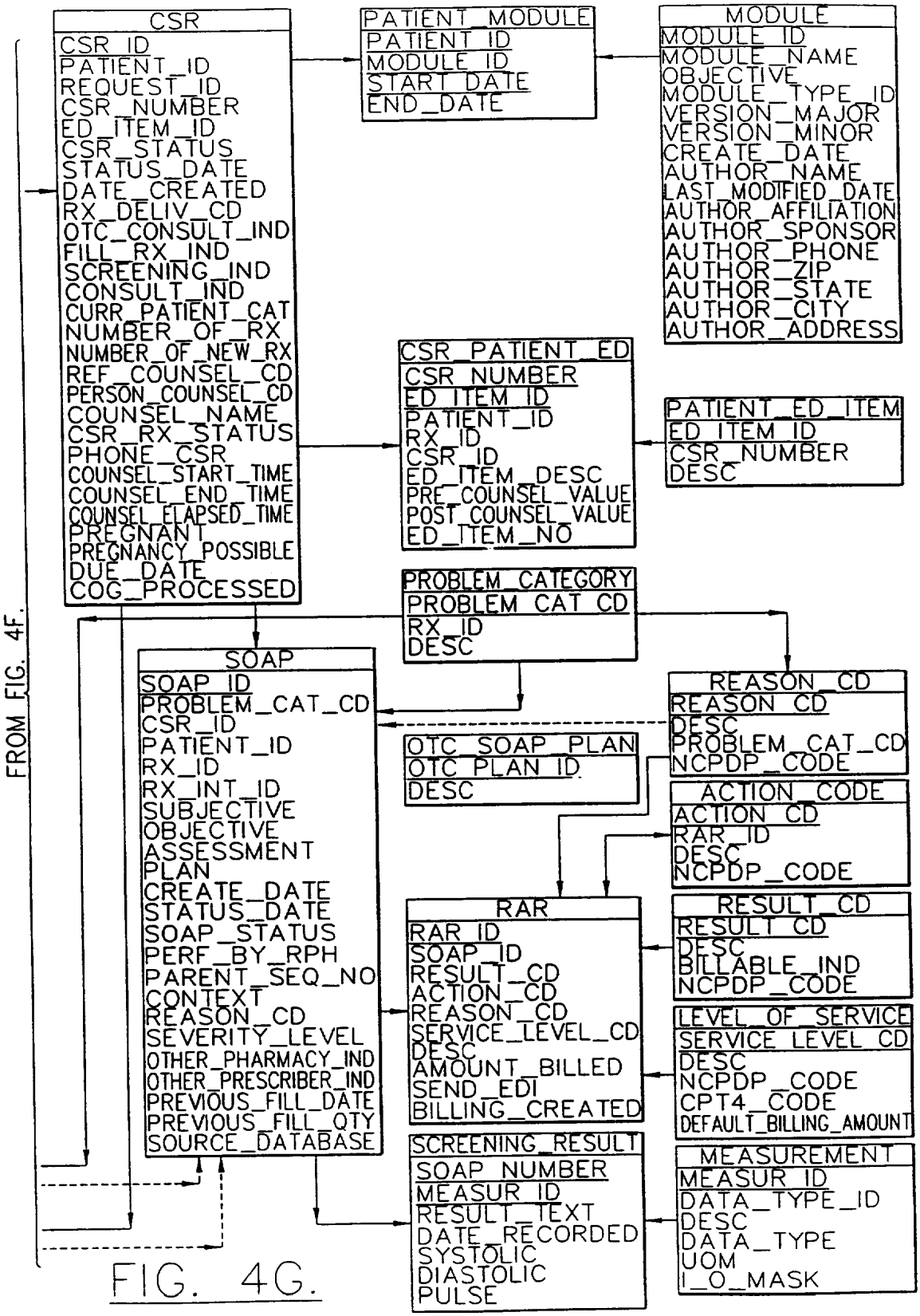

FROM FIG. 4F.
CSR
CSR_ID
PATIENT_ID
REQUEST_ID
CSR_NUMBER
ED_ITEM_ID
CSR_STATUS
STATUS_DATE
DATE_CREATED
RX_DELIV_CD
OTC_CONSULT_IND
FILL_RX_IND
SCREENING_IND
CONSULT_IND
CURR_PATIENT_CAT
NUMBER_OF_RX
NUMBER_OF_NEW_RX
REF_COUNSEL_CD
PERSON_COUNSEL_CD
COUNSEL_NAME
CSR_RX_STATUS
PHONE_CSR
COUNSEL_START_TIME
COUNSEL_END_TIME
COUNSEL_ELAPSED_TIME
PREGNANT
PREGNANCY_POSSIBLE
DUE_DATE
COG_PROCESSED
PATIENT_MODULE
PATIENT_ID
MODULE_ID
START_DATE
END_DATE
MODULE
MODULE_ID
MODULE_NAME
OBJECTIVE
MODULE_TYPE_ID
VERSION_MAJOR
VERSION_MINOR
CREATE_DATE
AUTHOR_NAME
LAST_MODIFIED_DATE
AUTHOR_AFFILIATION
AUTHOR_SPONSOR
AUTHOR_PHONE
AUTHOR_ZIP
AUTHOR_STATE
AUTHOR_CITY
AUTHOR_ADDRESS
CSR_PATIENT_ED
CSR_NUMBER
ED_ITEM_ID
PATIENT_ID
RX_ID
CSR_ID
ED_ITEM_DESC
PRE_COUNSEL_VALUE
POST_COUNSEL_VALUE
ED_ITEM_NO
PATIENT_ED_ITEM
ED_ITEM_ID
CSR_NUMBER
DESC
PROBLEM_CATEGORY
PROBLEM_CAT_CD
RX_ID
DESC
SOAP
SOAP_ID
PROBLEM_CAT_CD
CSR_ID
PATIENT_ID
RX_ID
RX_INT_ID
SUBJECTIVE
OBJECTIVE
ASSESSMENT
PLAN
CREATE_DATE
STATUS_DATE
SOAP_STATUS
PERF_BY_RPH
PARENT_SEQ_NO
CONTEXT
REASON_CD
SEVERITY_LEVEL
OTHER_PHARMACY_IND
OTHER_PRESCRIBER_IND
PREVIOUS_FILL_DATE
PREVIOUS_FILL_QTY
SOURCE_DATABASE
REASON_CD
REASON_CD
DESC
PROBLEM_CAT_CD
NCPDP_CODE
OTC_SOAP_PLAN
OTC_PLAN_ID
DESC
ACTION_CODE
ACTION_CD
RAR_ID
DESC
NCPDP_CODE
RAR
RAR_ID
SOAP_ID
RESULT_CD
ACTION_CD
REASON_CD
SERVICE_LEVEL_CD
DESC
AMOUNT_BILLED
SEND_EDI
BILLING_CREATED
RESULT_CD
RESULT_CD
DESC
BILLABLE_IND
NCPDP_CODE
LEVEL_OF_SERVICE
SERVICE_LEVEL_CD
DESC
NCPDP_CODE
CPT4_CODE
DEFAULT_BILLING_AMOUNT
SCREENING_RESULT
SOAP_NUMBER
MEASUR_ID
RESULT_TEXT
DATE_RECORDED
SYSTOLIC
DIASTOLIC
PULSE
MEASUREMENT
MEASUR_ID
DATA_TYPE_ID
DESC
DATA_TYPE
UOM
I_O_MASK

FIG. 4G.

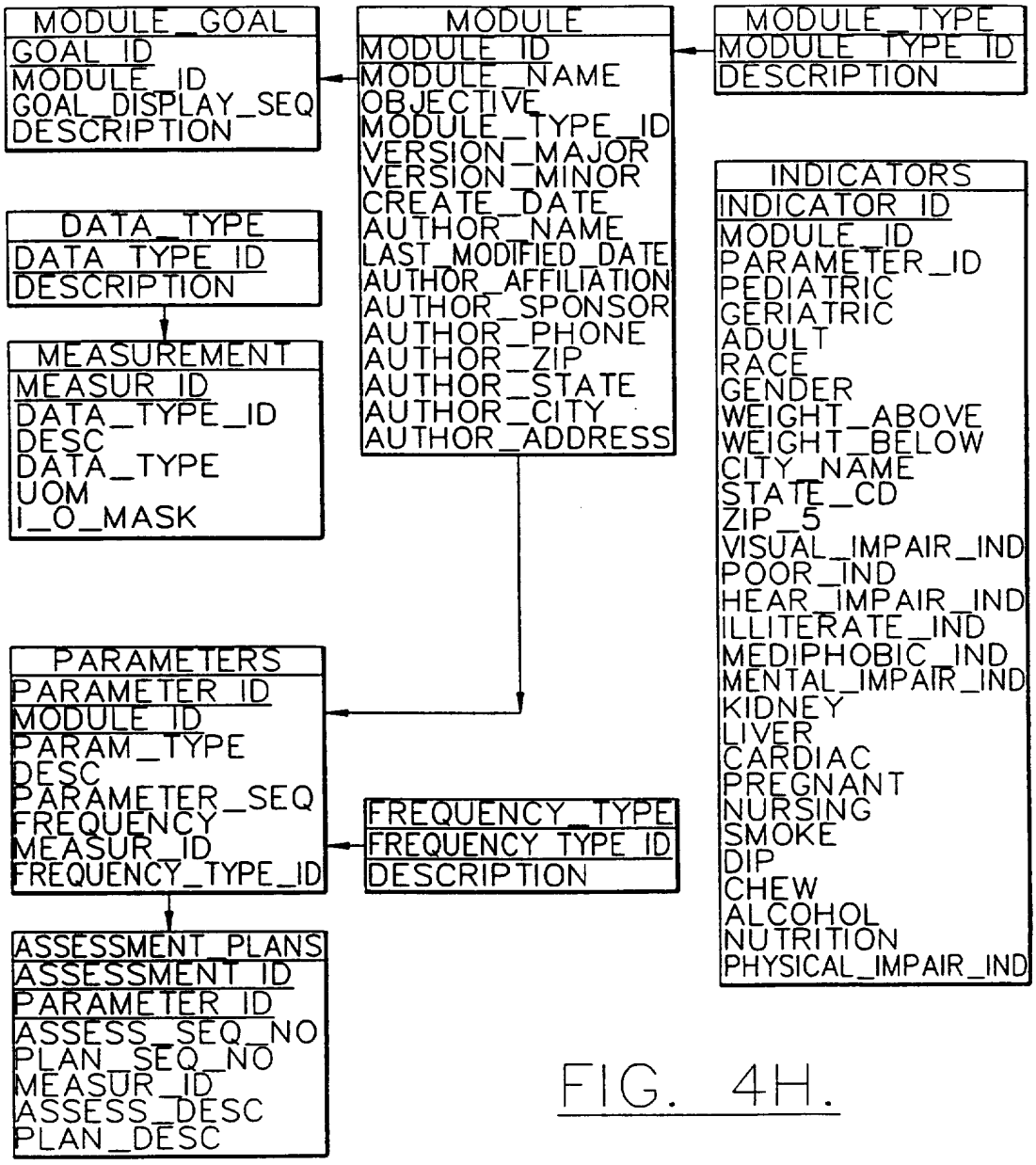

MODULE_GOAL
GOAL_ID
MODULE_ID
GOAL_DISPLAY_SEQ
DESCRIPTION
MODULE
MODULE_ID
MODULE_NAME
OBJECTIVE
MODULE_TYPE_ID
VERSION_MAJOR
VERSION_MINOR
CREATE_DATE
AUTHOR_NAME
LAST_MODIFIED_DATE
AUTHOR_AFFILIATION
AUTHOR_SPONSOR
AUTHOR_PHONE
AUTHOR_ZIP
AUTHOR_STATE
AUTHOR_CITY
AUTHOR_ADDRESS
MODULE_TYPE
MODULE_TYPE_ID
DESCRIPTION
INDICATORS
INDICATOR_ID
MODULE_ID
PARAMETER_ID
PEDIATRIC
GERIATRIC
ADULT
RACE
GENDER
WEIGHT_ABOVE
WEIGHT_BELOW
CITY_NAME
STATE_CD
ZIP_5
VISUAL_IMPAIR_IND
POOR_IND
HEAR_IMPAIR_IND
ILLITERATE_IND
MEDIPHOBIC_IND
MENTAL_IMPAIR_IND
KIDNEY
LIVER
CARDIAC
PREGNANT
NURSING
SMOKE
DIP
CHEW
ALCOHOL
NUTRITION
PHYSICAL_IMPAIR_IND
DATA_TYPE
DATA_TYPE_ID
DESCRIPTION
MEASUREMENT
MEASUR_ID
DATA_TYPE_ID
DESC
DATA_TYPE
UOM
I_O_MASK
PARAMETERS
PARAMETER_ID
MODULE_ID
PARAM_TYPE
DESC
PARAMETER_SEQ
FREQUENCY
MEASUR_ID
FREQUENCY_TYPE_ID
FREQUENCY_TYPE
FREQUENCY_TYPE_ID
DESCRIPTION
ASSESSMENT_PLANS
ASSESSMENT_ID
PARAMETER_ID
ASSESS_SEQ_NO
PLAN_SEQ_NO
MEASUR_ID
ASSESS_DESC
PLAN_DESC

FIG. 4H.

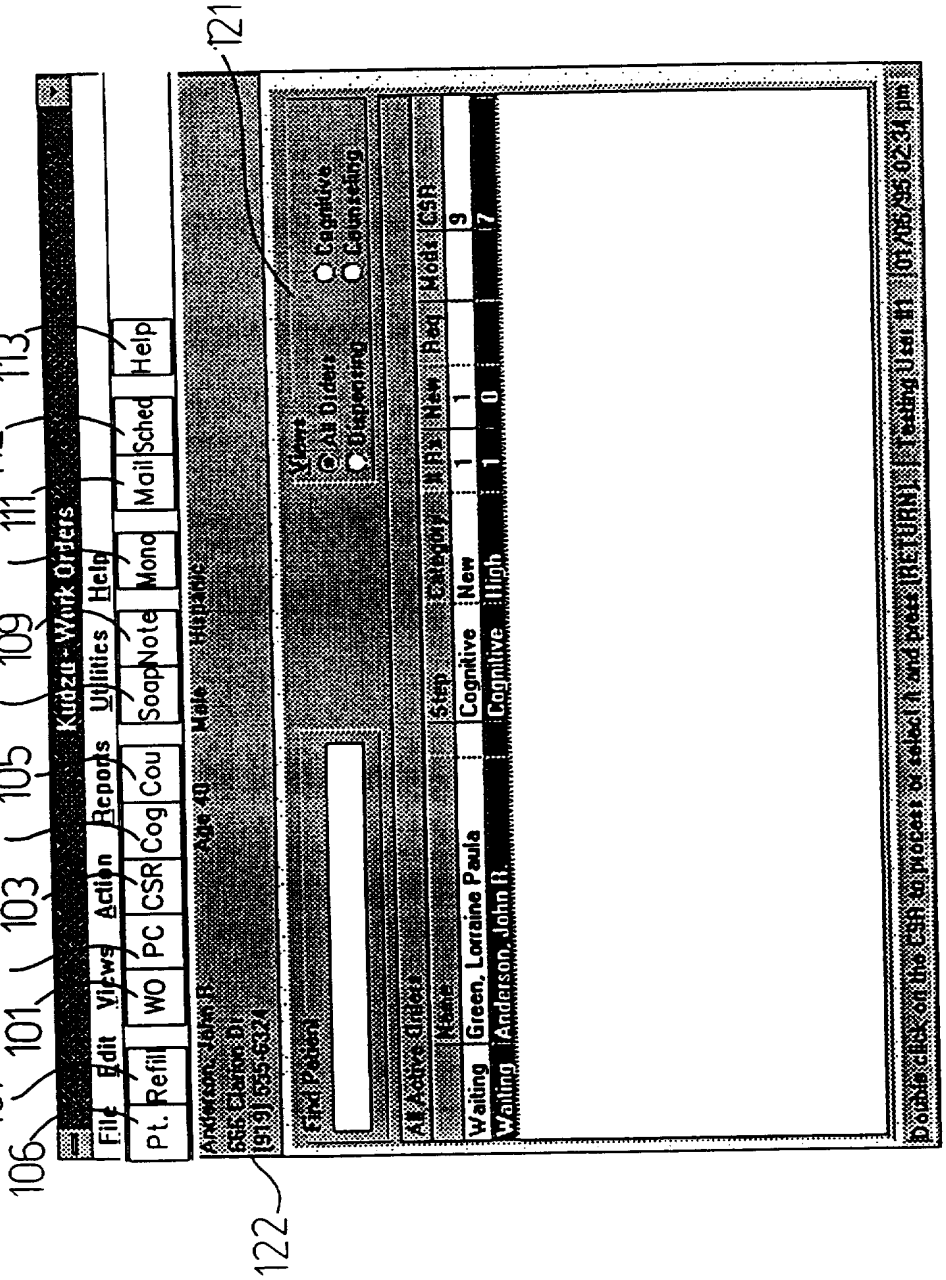

Kudzu - Work Orders
File Edit Views Action Reports Utilities Help
Pt. Refill WO PC CSR Cog Cou Soap Note Mono Mail Sched Help
Find Patient
All Active Orders
Name
Waiting Green, Lorraine Paula
Waiting Anderson, John R
Step
Cognitive
Cognitive
Category
New
High
Views
All Orders
Dispensing
Cognitive
Counseling
New
Req
Mods
CSR
9
7
Double click on the CSR to process or select it and press [RETURN]
Testing User #1
01/26/95 02:34 pm
101
102
103
104
105
106
107
108
109
110
111
112
113
121
122

FIGURE 5A

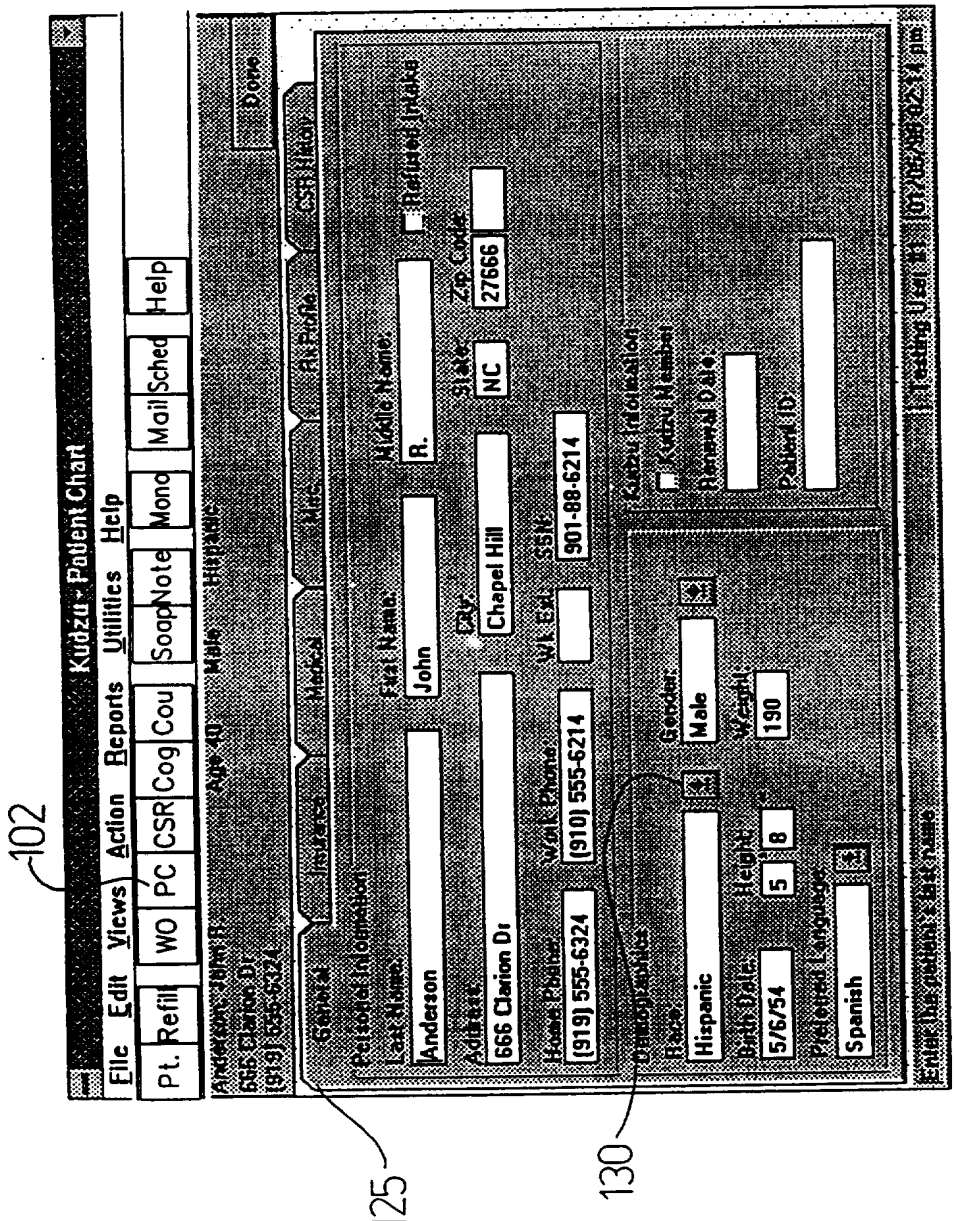

102
Kudzu - Patient Chart
File Edit Views Action Reports Utilities Help
Pt. Refill WO PC CSR Cog Cou Soap Note Mono Mail Sched Help
Anderson, John R. Age 40 Male Hispanic
666 Clarion Dr
(919) 555-6324
Done
General Insurance Medical Misc. Rx Profile CSR History
Refused Intake
Personal Information
Last Name:
Anderson
First Name:
John
Middle Name:
R.
Address:
666 Clarion Dr
City:
Chapel Hill
State:
NC
Zip Code:
27666
Home Phone:
(919) 555-6324
Work Phone:
(910) 555-6214
Wk. Ext.
SSN:
901-88-6214
Demographics
Race:
Hispanic
Gender:
Male
Birth Date:
5/6/54
Height:
5
8
Weight:
190
Preferred Language:
Spanish
Education
Active Military
Renewal Date
Patient ID
Testing User 1
125
130

FIGURE 5B

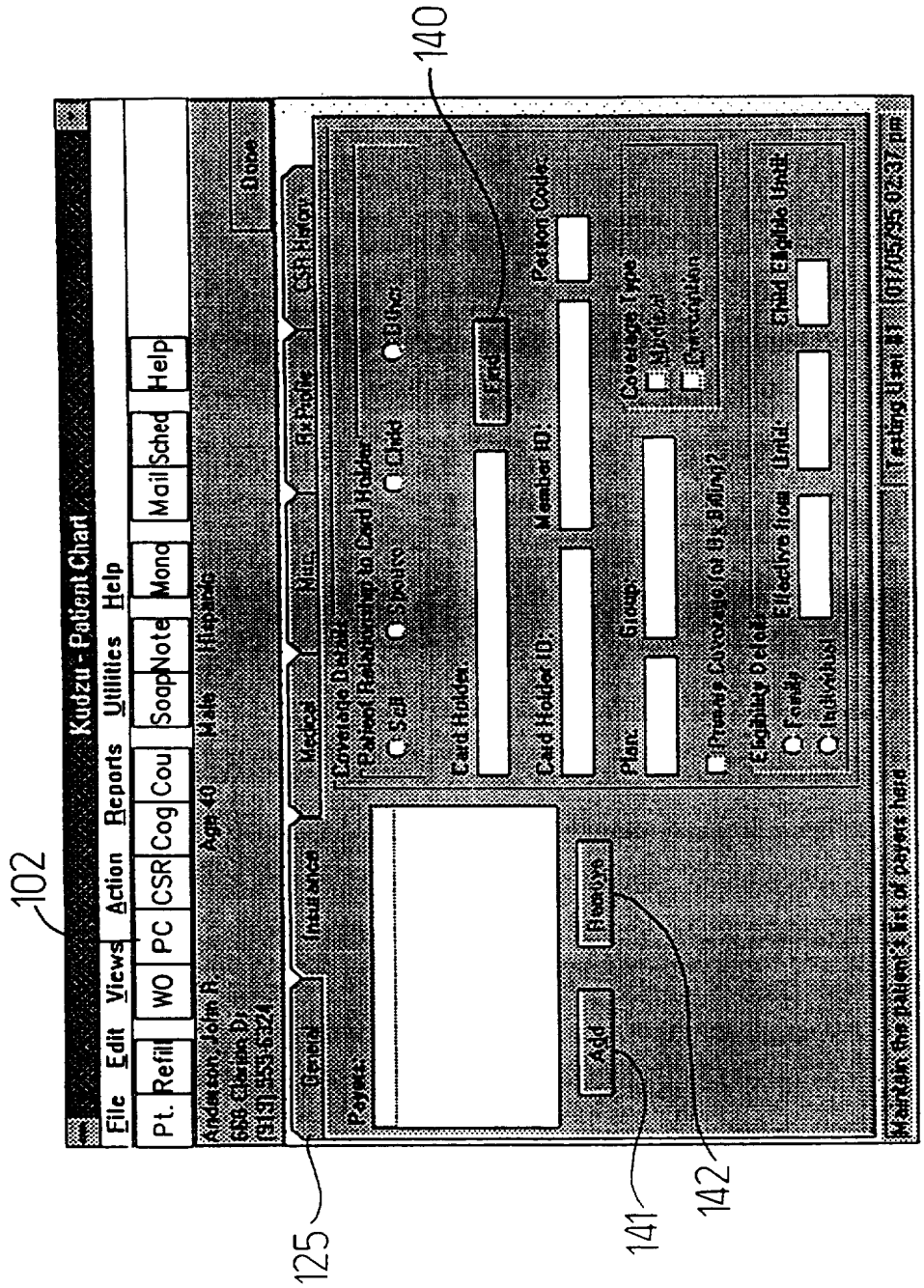

102
140
125
141
142
Kudzu - Patient Chart
File Edit Views Action Reports Utilities Help
Pt. Refill WO PC CSR Cog Cou Soap Note Mona Mail Sched Help
Done
General
Insurance
Medical
Misc
Rx Profile
Cost History
Payers:
Add
Remove
Coverage Dates
Patient Relationship to Card Holder
Self
Spouse
Child
Other
Card Holder:
Card Holder ID:
Find
Member ID:
Patient Code:
Plan:
Group:
Coverage Type
Medical
Prescription
Provides Coverage for Dependents
Eligibility Dates
Effective from
Until:
Family
Individual
Child Eligible Until:
Retrieving Client #1
01/05/95 02:37 pm

FIGURE 5C

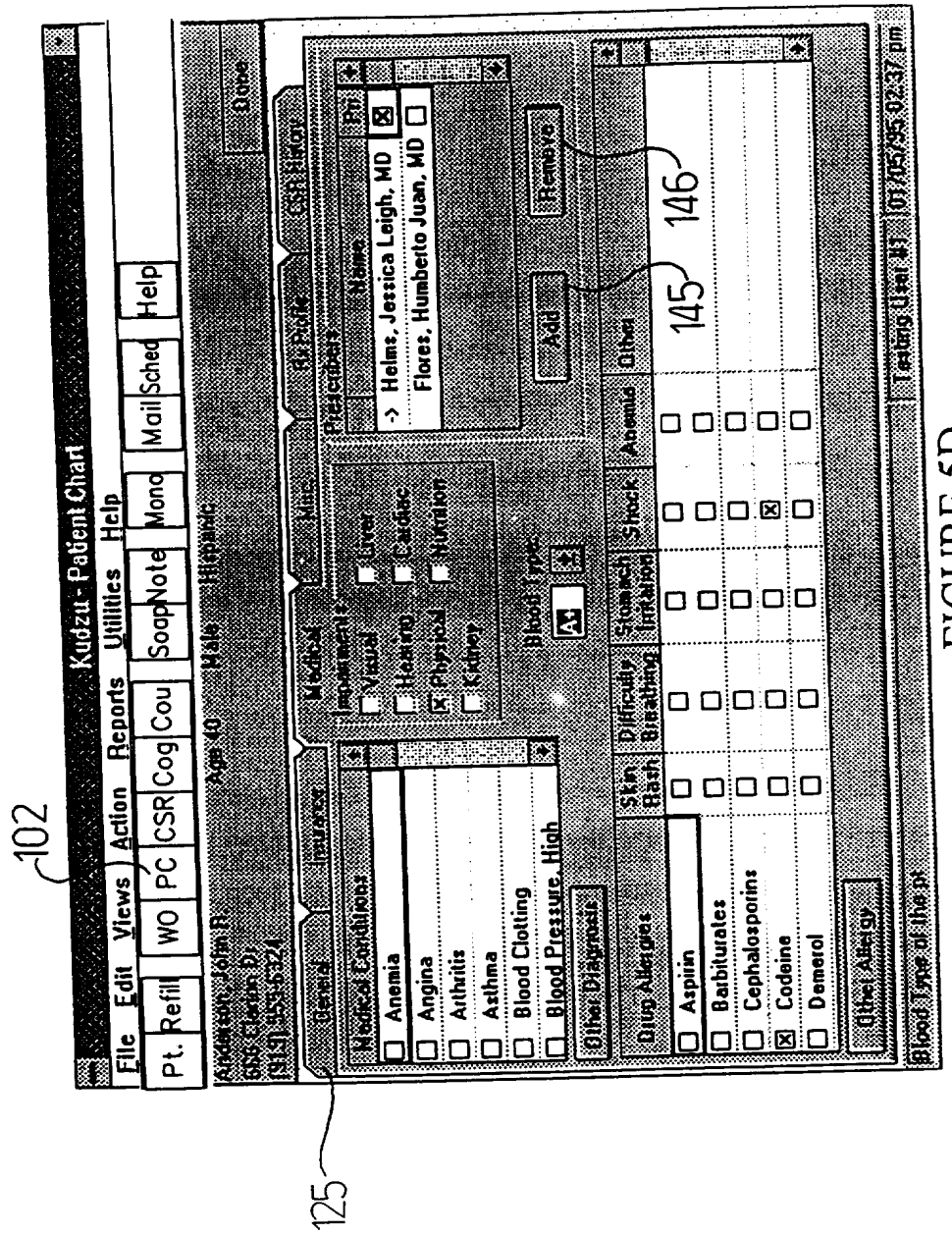

102
125
145
146
Kudzu - Patient Chart
File Edit Views Action Reports Utilities Help
Pt. Refill WO PC CSR Cog Cou Soap Note Mono Mail Sched Help
Anderson, John R.
Age: 40
Male
Hispanic
Done
Demog
Injuries
Medical Conditions
Anemia
Angina
Arthritis
Asthma
Blood Clotting
Blood Pressure, High
Other Diagnosis
Medical Impairments
Visual
Hearing
Physical
Kidney
Liver
Cardiac
Nutrition
Blood Type:
Allergies
Drug Allergies
Aspirin
Barbiturates
Cephalosporins
Codeine
Demerol
Other Allergy
Skin Rash
Difficulty Breathing
Stomach Irritation
Shock
Anemia
Other
Prescribers
Name
-> Helmt, Jessica Leigh, MD
Flores, Humberto Juan, MD
Add
Remove
GSR Block
Main
Testing User #3
01/05/95 02:37 pm
Blood Type of the pt

FIGURE 5D

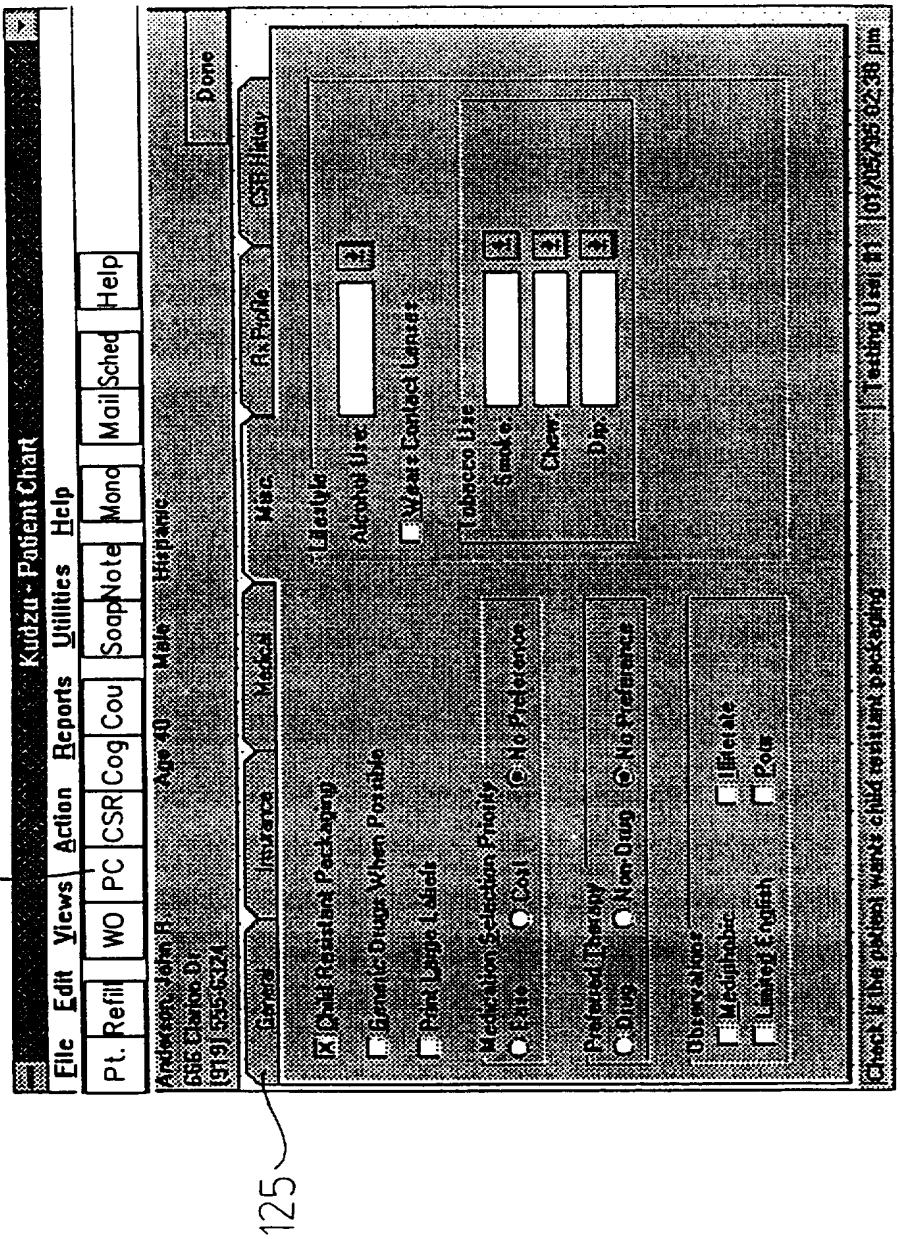

102
125
Kudzu - Patient Chart
File Edit Views Action Reports Utilities Help
Pt. Refill WO PC CSR Cog Cou SoapNote Mond MailSched Help
Anderson, John R.
555 Baron Dr.
(919) 555-6324
Age 40 Male Hispanic
Done
Demog Insurance Medical Misc. Rx Profile CSR History
Child Resistant Packaging
Generic Drugs When Possible
Pant Legs: Long Short
Medication Selection Priority
Cost No Preference
Patient Setting
Drug Non-Drug No Preference
Observation
Medication Bicycle
Limited English Pain
Lifestyle
Alcohol Use
Wears Contact Lenses
Tobacco Use
Smoke
Chew
Dip
Check if the patient wants child resistant packaging
Testing Unit #1 07/05/95 02:38 pm

FIGURE 5E

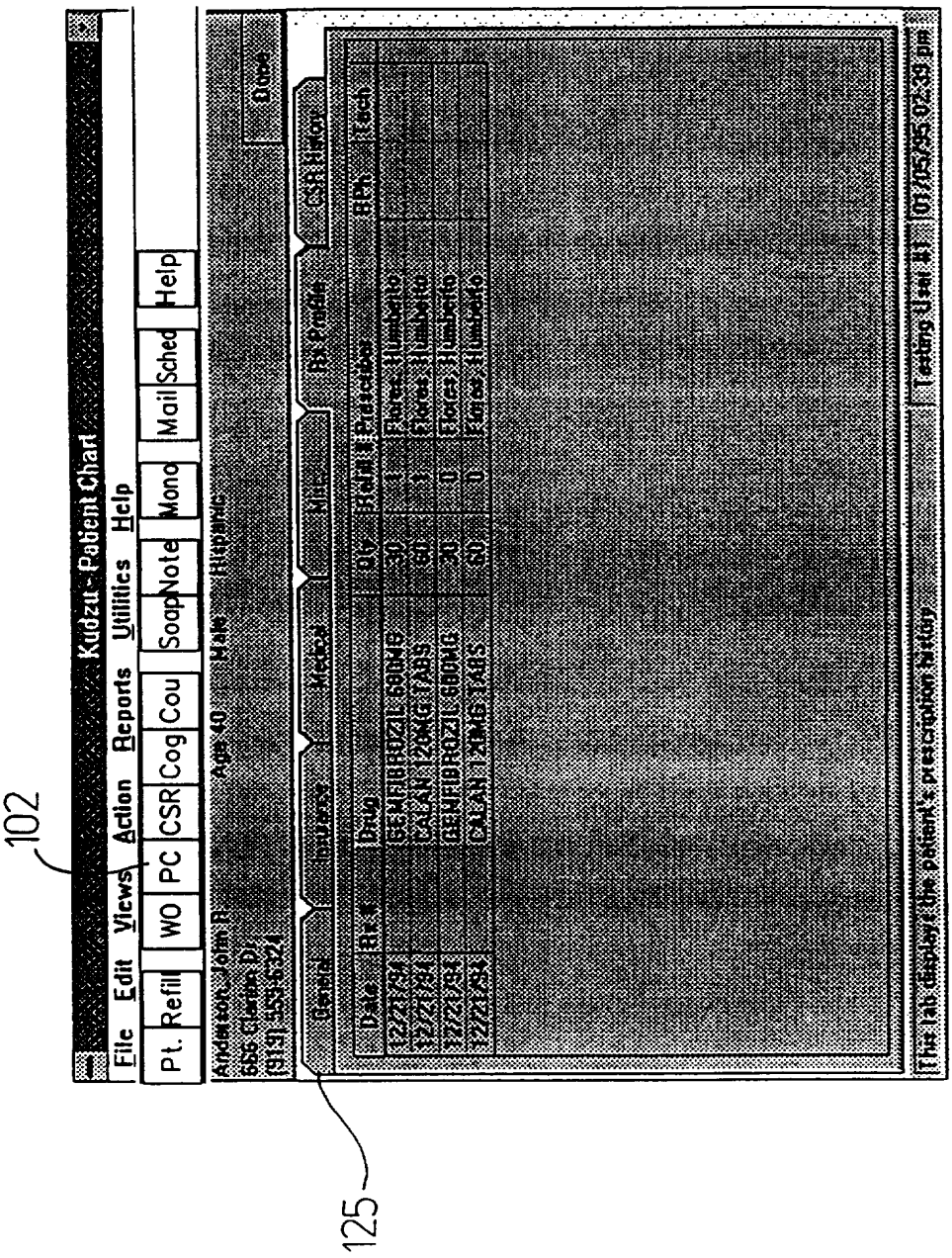

102
125
Kudzu - Patient Chart
File Edit Views Action Reports Utilities Help
Pt. Refill WO PC CSR Cog Cou SoapNote Mono Mail Sched Help
Anderson,John R
Age:40 Male Hispanic
Done
Date Rx# Drug Qty Brief Directions Refs Tech
12/21/94 BEMFIBROZIL 600MG 30 1 Floss,Blumbelo
12/21/94 CALAN 120MG TABS 60 3 Floss,Blumbelo
12/21/94 BEMFIBROZIL 600MG 30 0 Floss,Blumbelo
12/21/94 CALAN 120MG TABS 60 0 Floss,Blumbelo
The lab displays the patient's prescription history
01/05/95 02:39 pm

FIGURE 5F

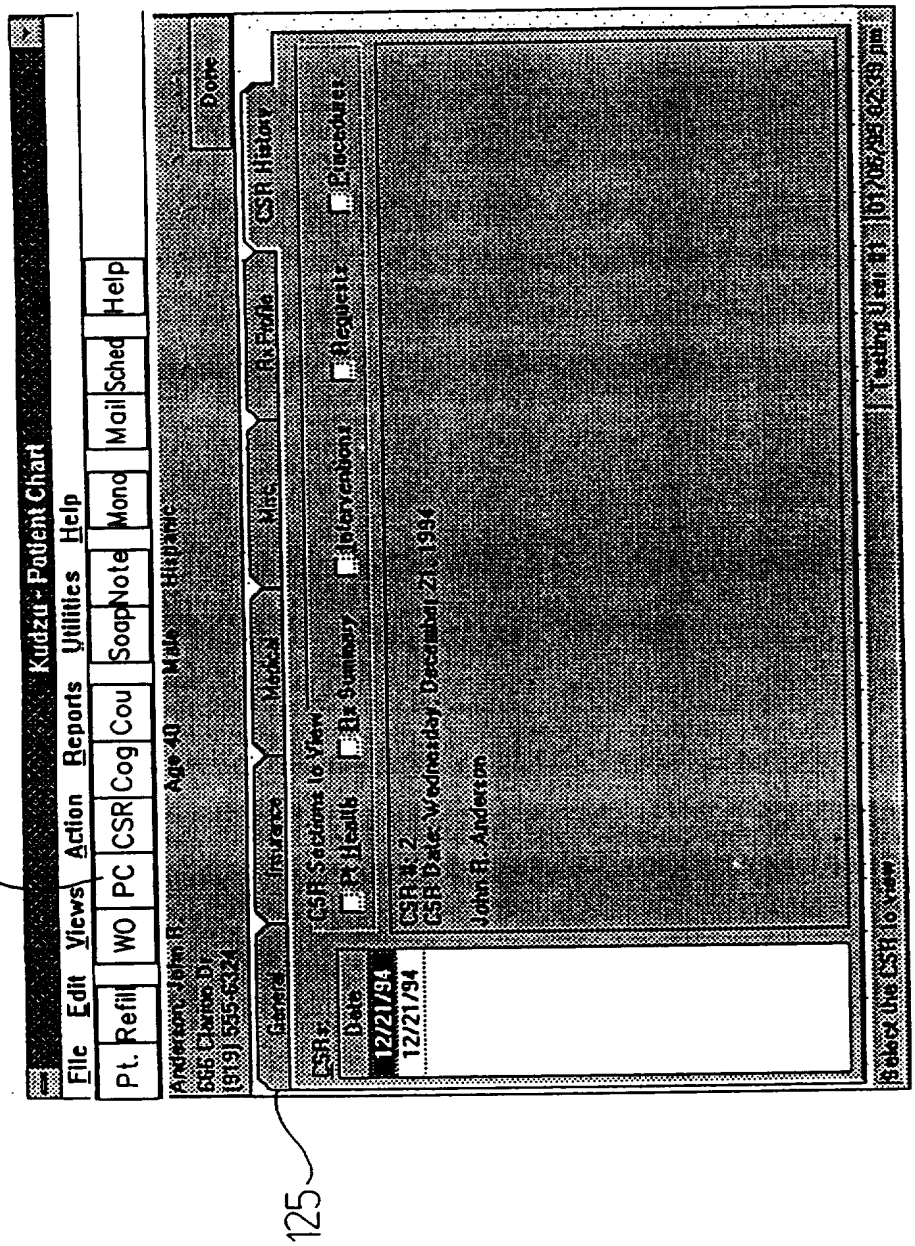

Kudzu - Patient Chart
File Edit Views Action Reports Utilities Help
Pt. Refill WO PC CSR Cog Cou SoapNote Mond Mail Sched Help
Done
102
125

FIGURE 5G

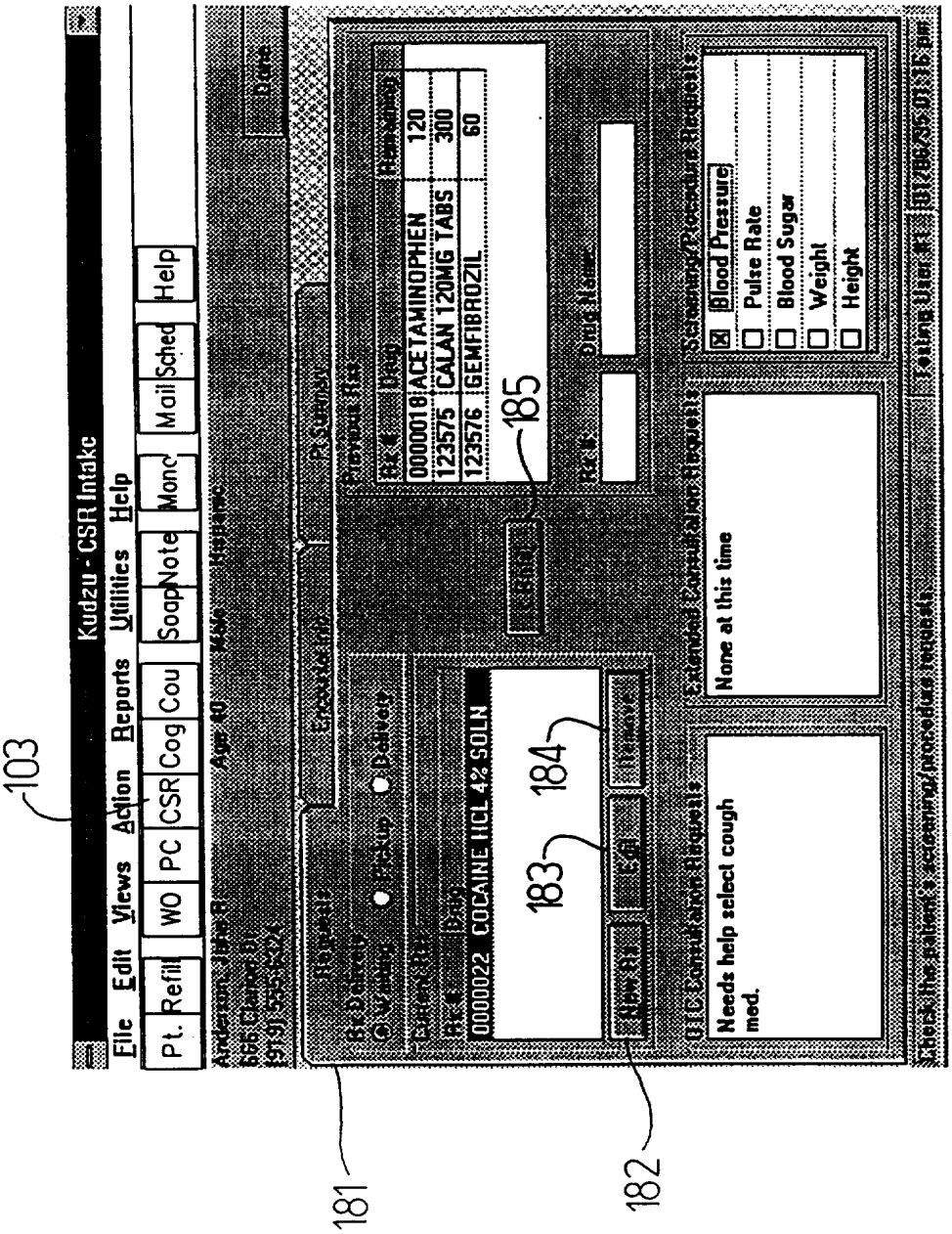

103
Kudzu - CSR Intake
File Edit Views Action Reports Utilities Help
Pt. Refill WO PC CSR Cog Cou Soap Note Monc Mail Sched Help
Done
Prescriptions
Previous Rx
Ref # Drug Remaining
0000016 ACETAMINOPHEN 120
123575 CALAN 120MG TABS 300
123576 GEMFIBROZIL 60
Refills
Dnd Hour
Screening Procedure Requests
Blood Pressure
Pulse Rate
Blood Sugar
Weight
Height
None at this time
Needs help select cough med.
0000022 COCAINE HCL 42 SOLN
181
182
183
184
185

FIGURE 5H

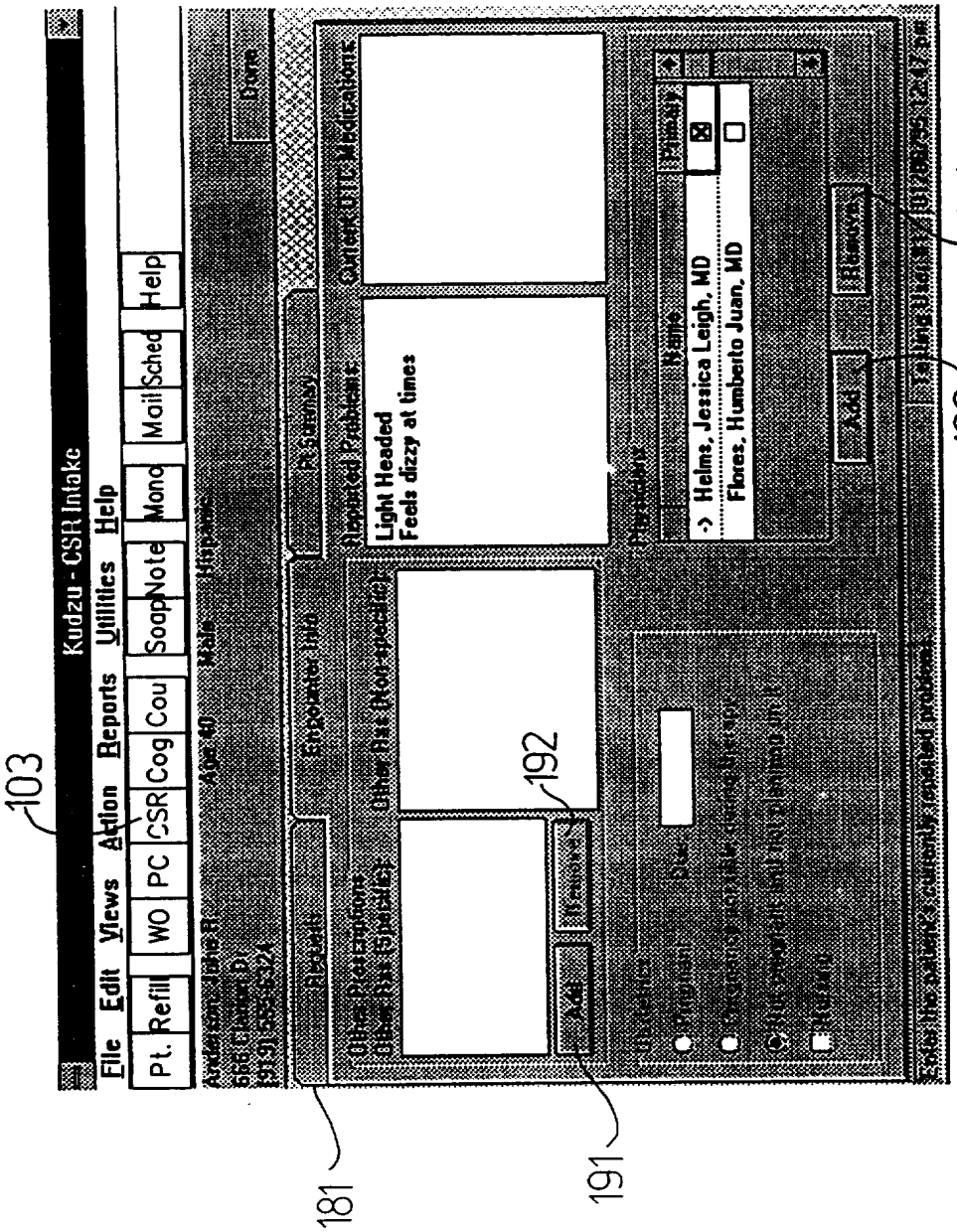

Kudzu - CSR Intake
File Edit Views Action Reports Utilities Help
Pt. Refill WO PC CSR Cog Cou SoapNote Mono MailSched Help
Done
Light Headed
Feels dizzy at times
Helms, Jessica Leigh, MD
Flores, Humberto Juan, MD
Add
Remove
103
181
191
192
193
194

FIGURE 5I

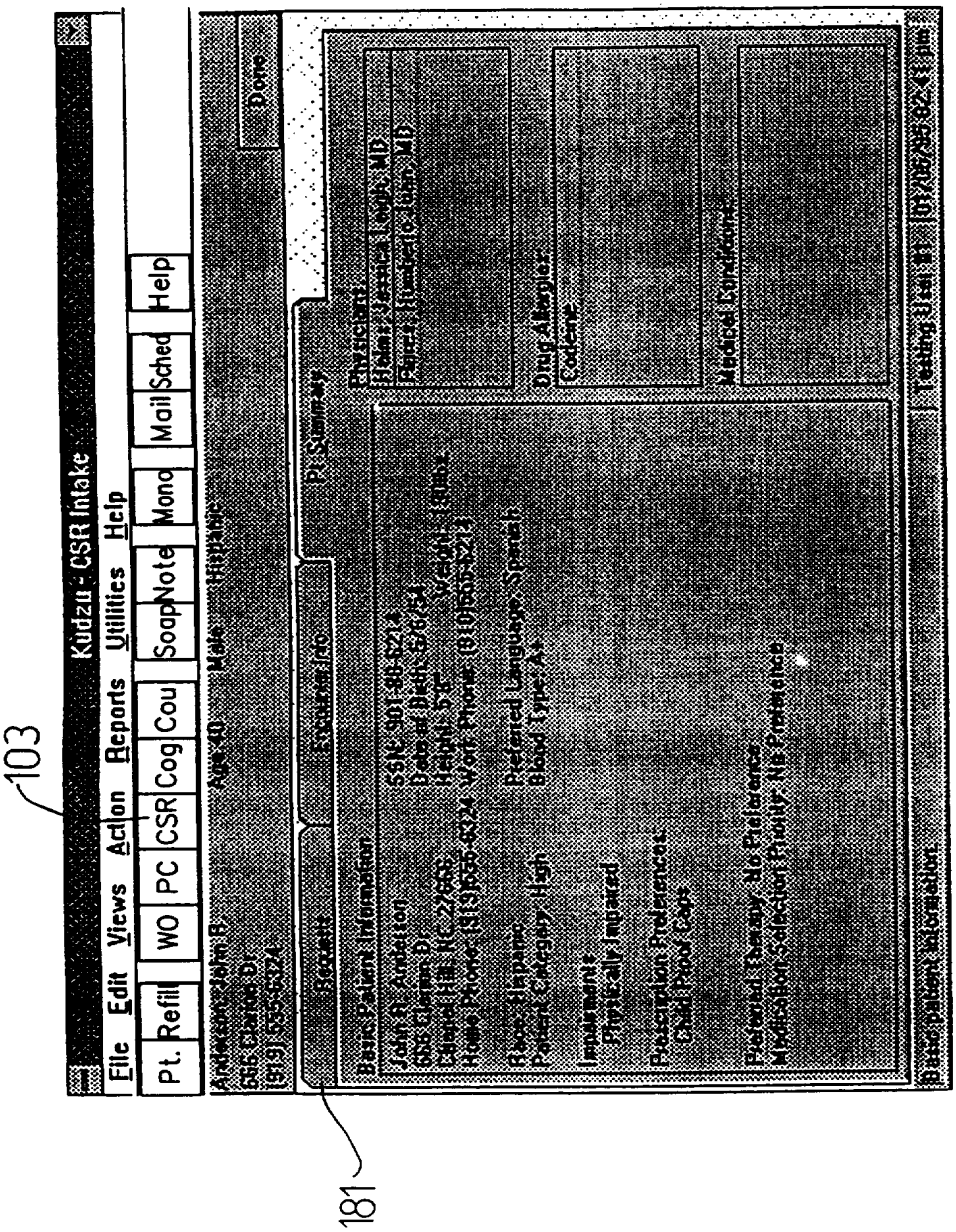

103
181
Kudzu - CSR Intake
File Edit Views Action Reports Utilities Help
Pt. Refill WO PC CSR Cog Cou SoapNote Mona Mail Sched Help
Done
Pt Summary
Basic Patient Information
Pharmacies
Drug Allergies
Medical Conditions
Problem List
Medication Selection Priority: No Preferences

FIGURE 5J

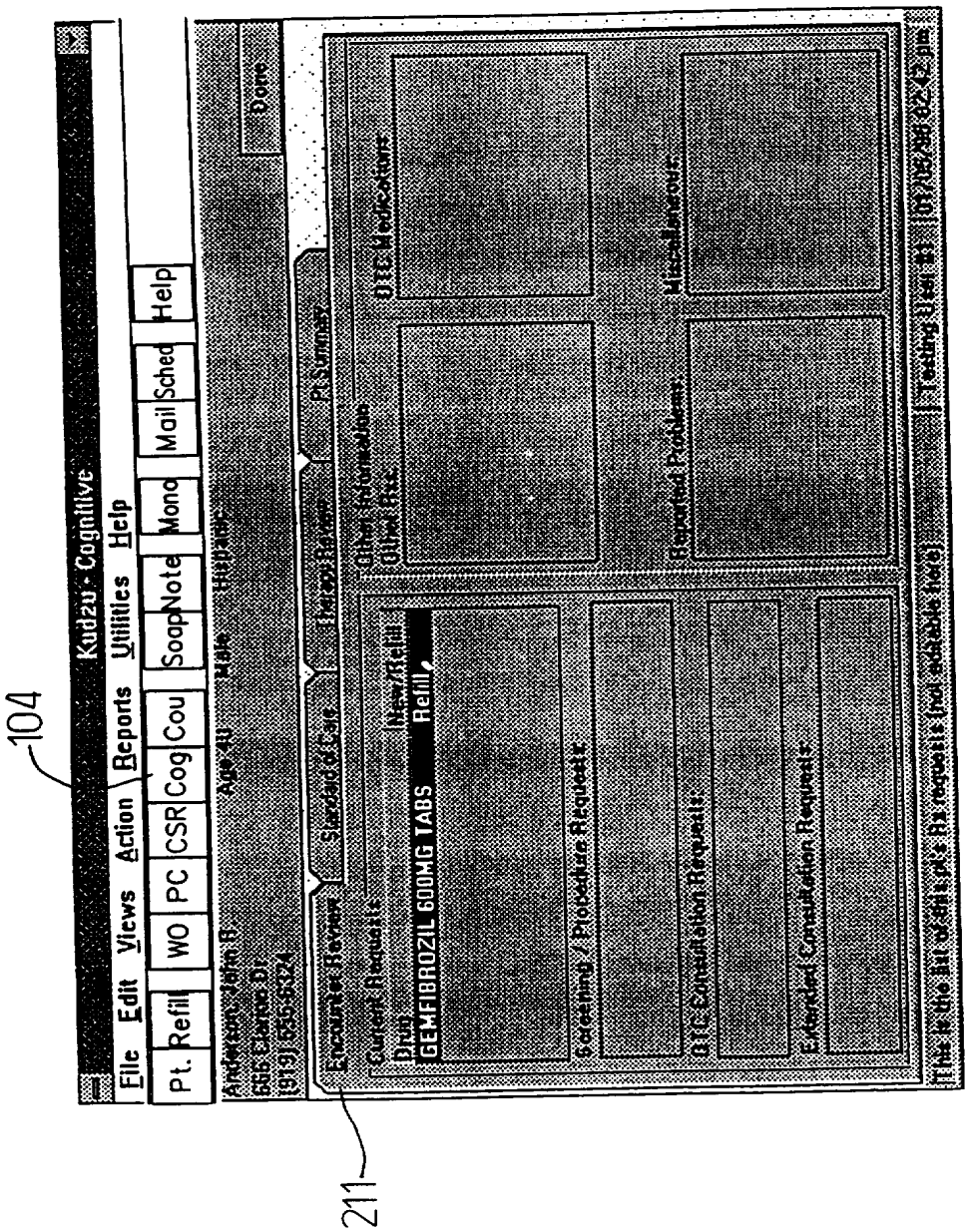

104
211
Kudzu - Cognitive
File Edit Views Action Reports Utilities Help
Pt. Refil WO PC CSR Cog Cou Soap Note Mona Mail Sched Help
Encounter Review
Standard Care
Other Information
Current Requests
Drug
GEMFIBROZIL 600MG TABS
New Refill
Refill
Screening / Procedure Requests
OTC Medications
Reported Problems
Miscellaneous
Extended Consultation Requests

FIGURE 5K

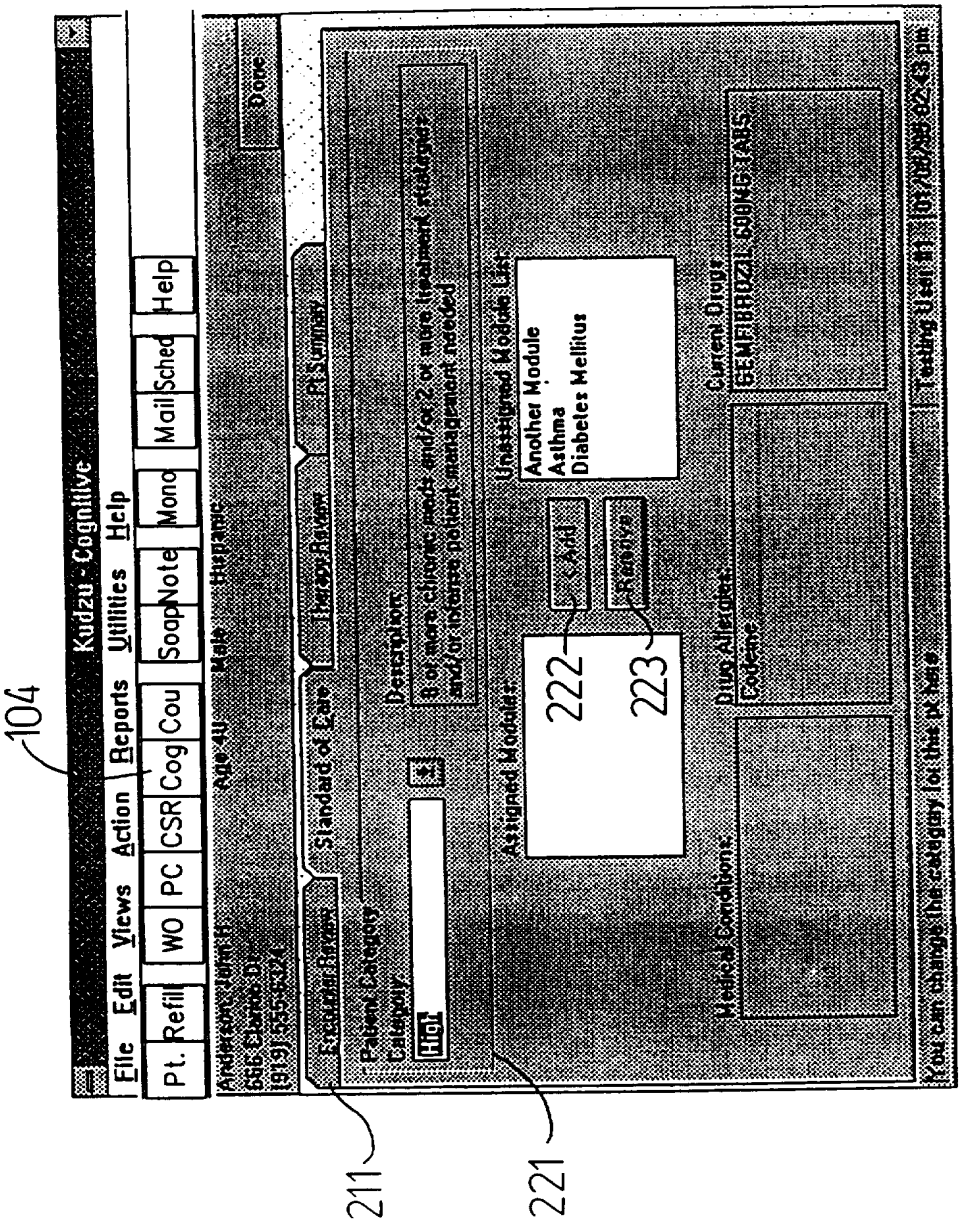

104
Kudzu - Cognitive
File Edit Views Action Reports Utilities Help
Pt. Refill WO PC CSR Cog Cou SoapNote Mond MailSched Help
Standard of Care
Therapy Review
Pt Summary
Description
Assigned Modules:
Unassigned Module List
Another Module
Asthma
Diabetes Mellitus
Add
Remove
222
223
211
221
Current Drugs
GEMFIBROZIL 600MG TABS
Drug Allergies:
Codeine
Medical Conditions:
Done

FIGURE 5L

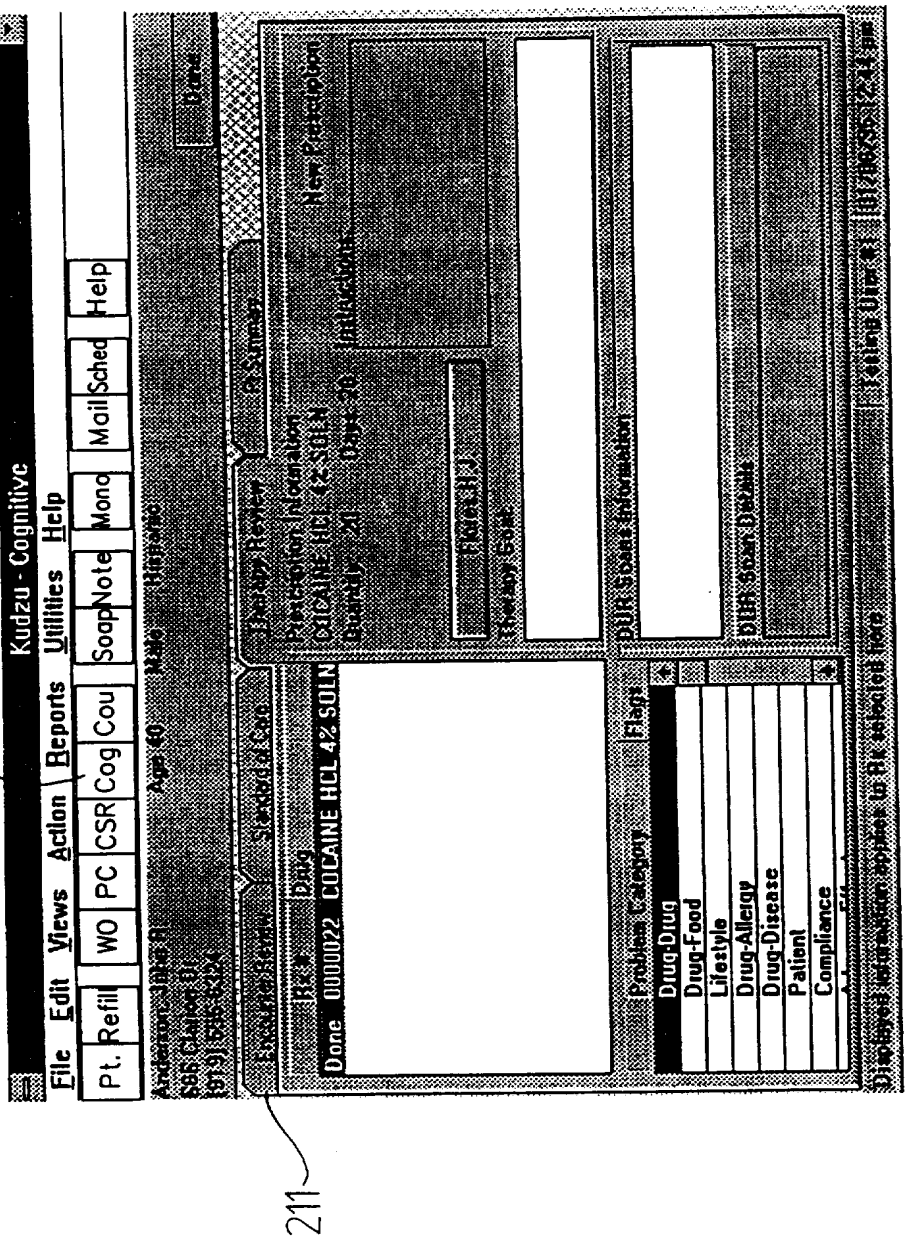

104
211
Kudzu - Cognitive
File Edit Views Action Reports Utilities Help
Pt. Refill WO PC CSR Cog Cou SoapNote Mona MailSched Help
Done
Drug
COCAINE HCL 42 SOLN
Problem Category
Drug-Drug
Drug-Food
Lifestyle
Drug-Allergy
Drug-Disease
Patient
Compliance
Flags
DUR Exam Information
DIR Exam Details

FIGURE 5M

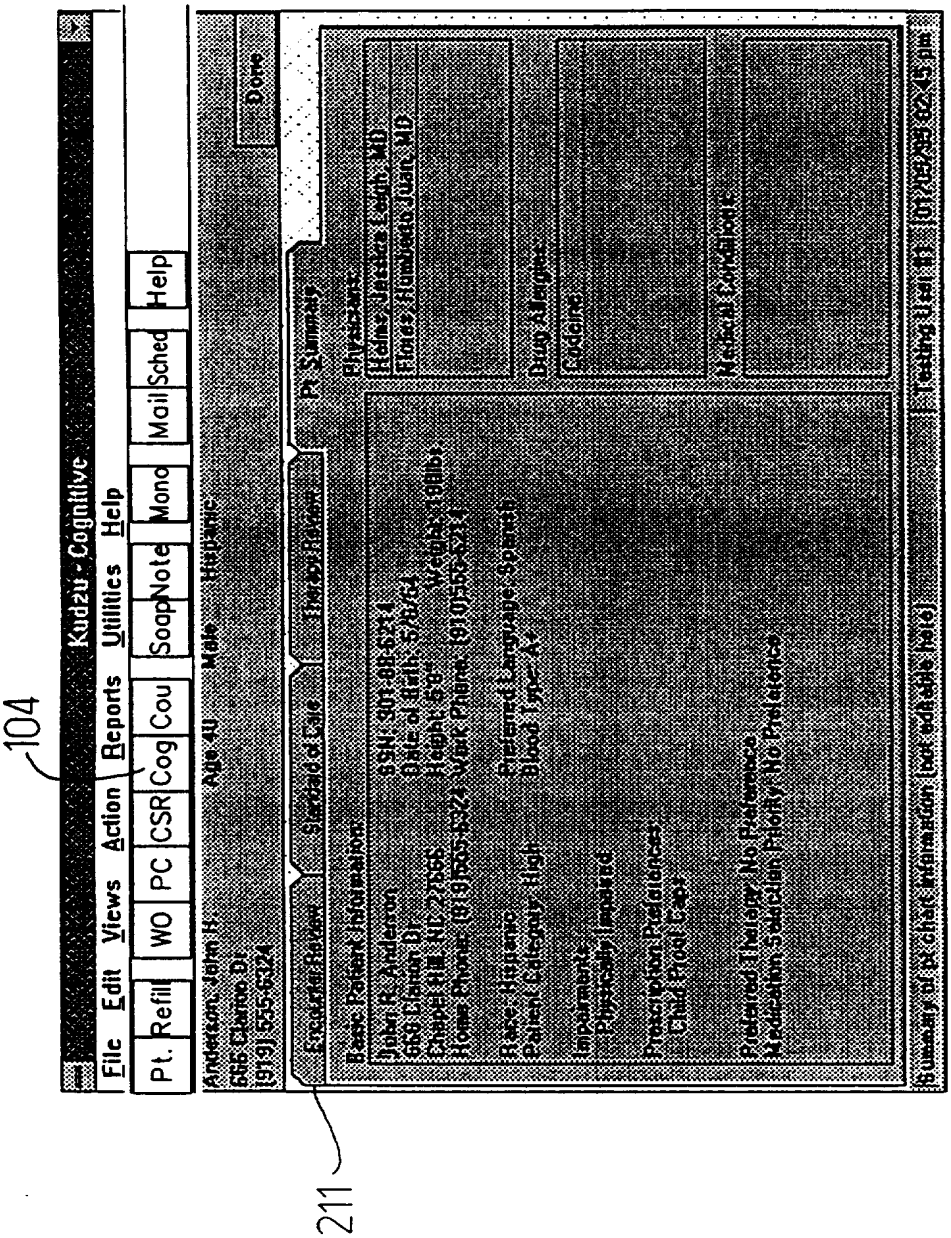

104
211
Kid2U - Cognitive
File Edit Views Action Reports Utilities Help
Pt. Refill WO PC CSR Cog Cou SoapNote Mono Mail Sched Help
Done

FIGURE 5N

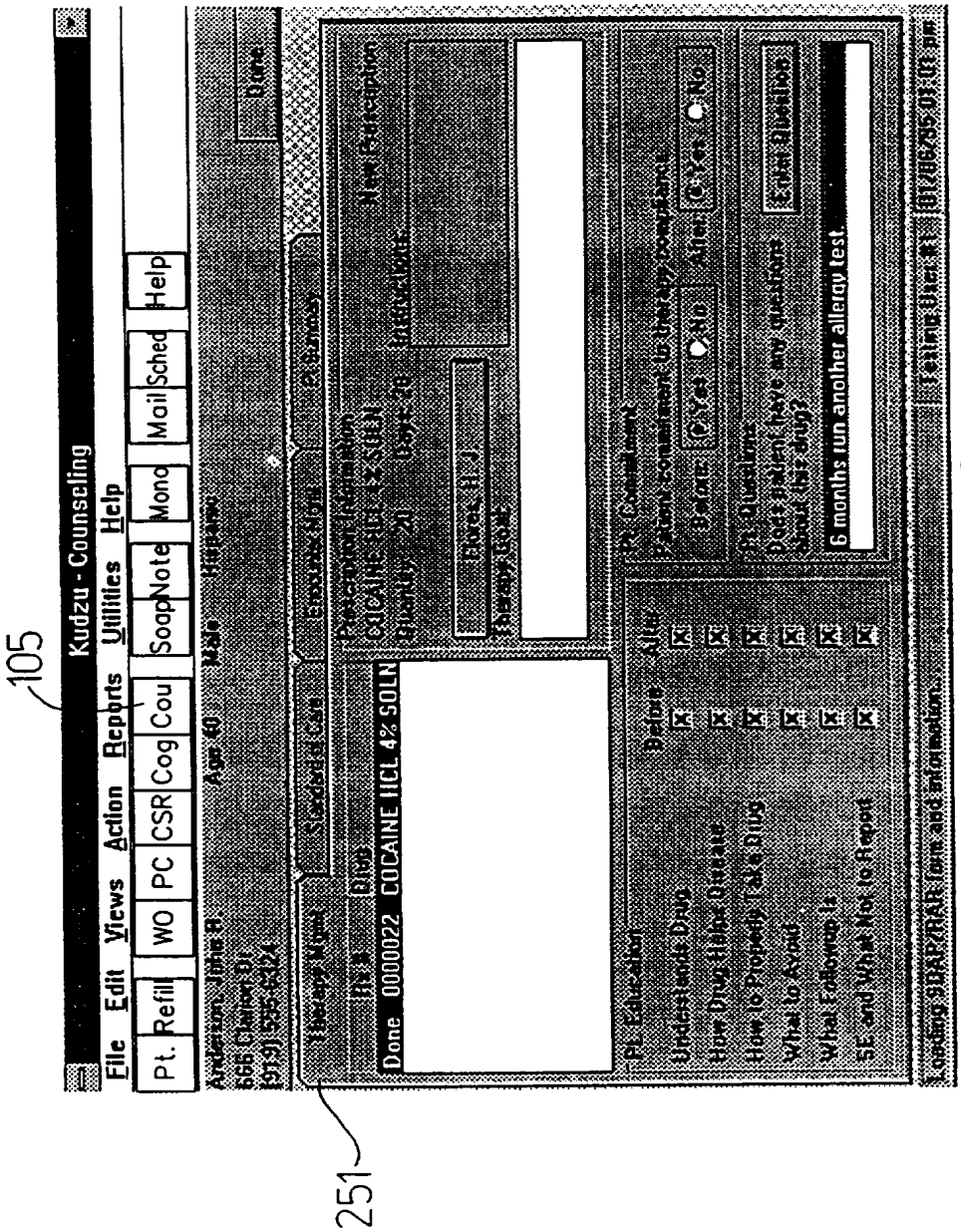

105
251
Kudzu - Counseling
File Edit Views Action Reports Utilities Help
Pt. Refill WO PC CSR Cog Cou SoapNote Mono Mail Sched Help
Done
Done 0000022 COCAINE HCL 4% SOLN
Pt. Education
Before After
Understand Drug
How Drug Hike Debate
How to Properly Take Drug
What to Avoid
What Follow-up is
SE and What Not to Report
Pt. Questions
Before After
6 months run another allergy test.
Loading STAFF/RAR form and information

FIGURE 50

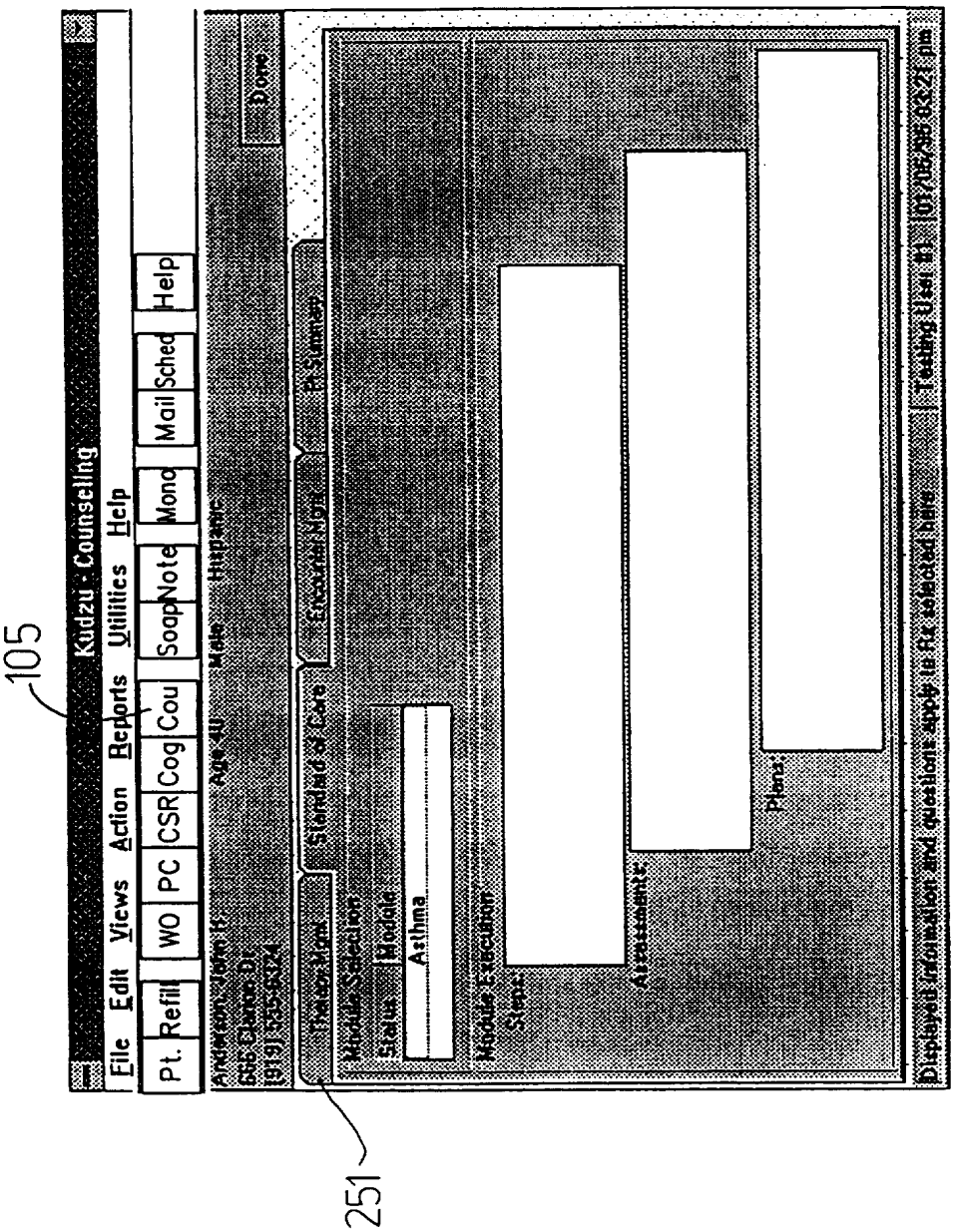

105
Kudzu - Counseling
File Edit Views Action Reports Utilities Help
Pt. Refill WO PC CSR Cog Cou SoapNote Mono Mail Sched Help
Done
Standard of Care
Encounter Note
P. Summary
Module Selection
Status Module
Asthma
Module Execution
Steps:
Assessment:
Plans:
Displayed information and questions apply to the selected item
Testing User #1
251

FIGURE 5P

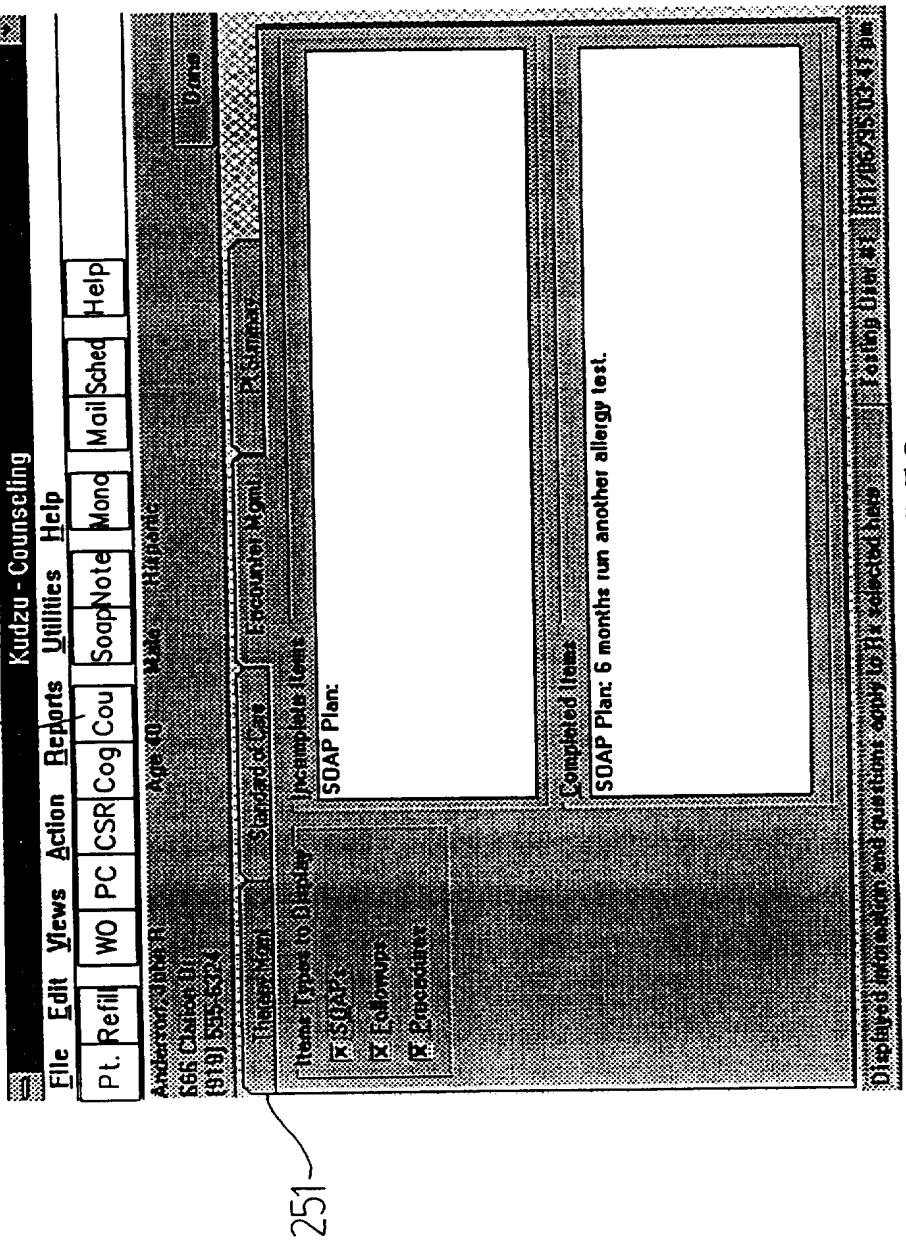

105
Kudzu - Counseling
File Edit Views Action Reports Utilities Help
Pt. Refill WO PC CSR Cog Cou SoapNote Mono Mail Sched Help
Standard Data
Encounter Hgmt
Items Typed to Display
SOAP
Followups
Procedures
Incomplete Items
SOAP Plan:
Completed Items
SOAP Plan: 6 months run another allergy test.
251

FIGURE 5Q

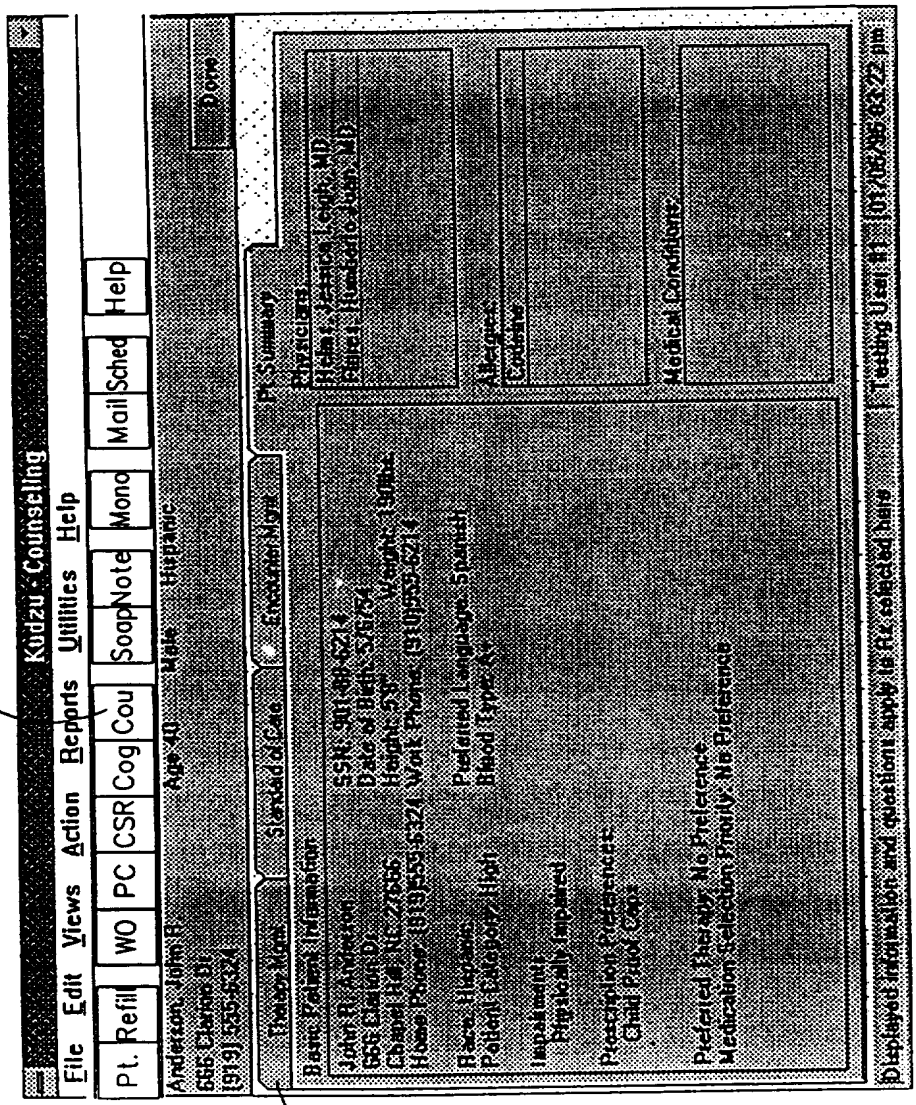

105
251
Kudzu - Counseling
File Edit Views Action Reports Utilities Help
Pt. Refill WO PC CSR Cog Cou SoapNote Mono Mail Sched Help
Anderson, John R.
555 Clarke Dr
(919) 555-5324
Age: 40
Male
Hispanic
Done
Basic Patient Information
Standard Care
Encounter Note
Pt. Summary
Allergies
Codeine
Medical Conditions
Displayed information and options apply to the selected item
Testing User 1

FIGURE 5R

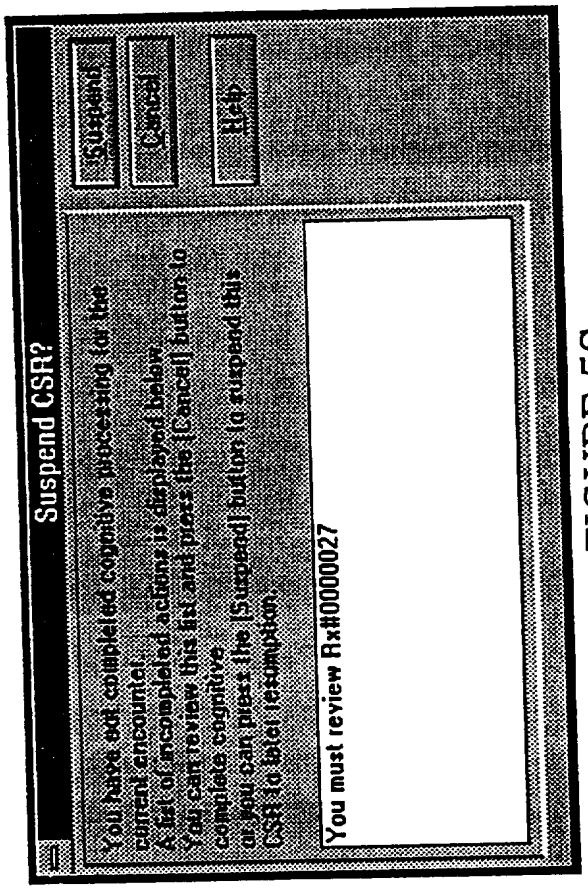

Suspend CSR?
You have not completed cognitive processing for the current encounter.
A list of incomplete actions is displayed below.
You can review this list and press the [Cancel] button to complete cognitive
or you can press the [Suspend] button to suspend this CSR to later resumption.
You must review Rx#0000027
Suspend
Cancel
Help

FIGURE 5S

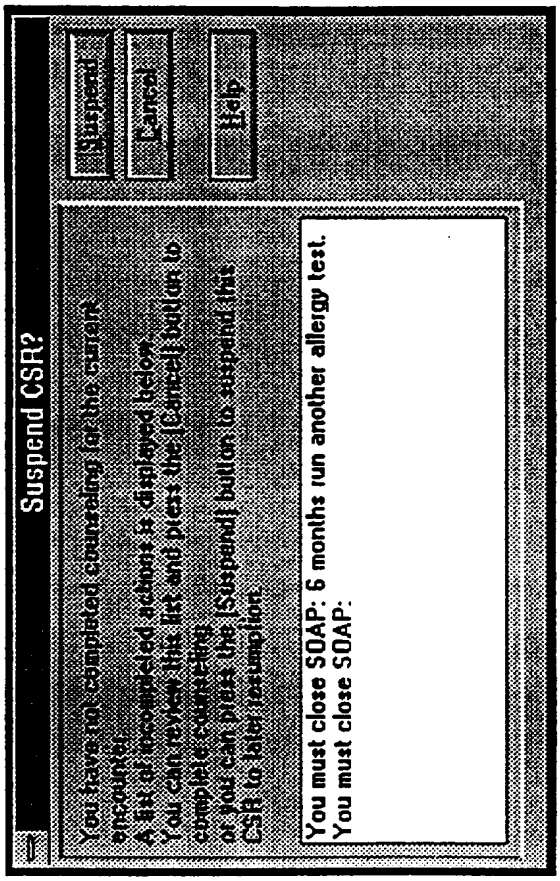

Suspend CSR?
You have not completed outstanding for the current encounter.
A list of incompleted actions is displayed below.
You can review this list and press the [Cancel] button to complete outstanding
or you can press the [Suspend] button to suspend the CSR to later resumption.
Suspend
Cancel
Help
You must close SOAP: 6 months run another allergy test.
You must close SOAP:

FIGURE 5T

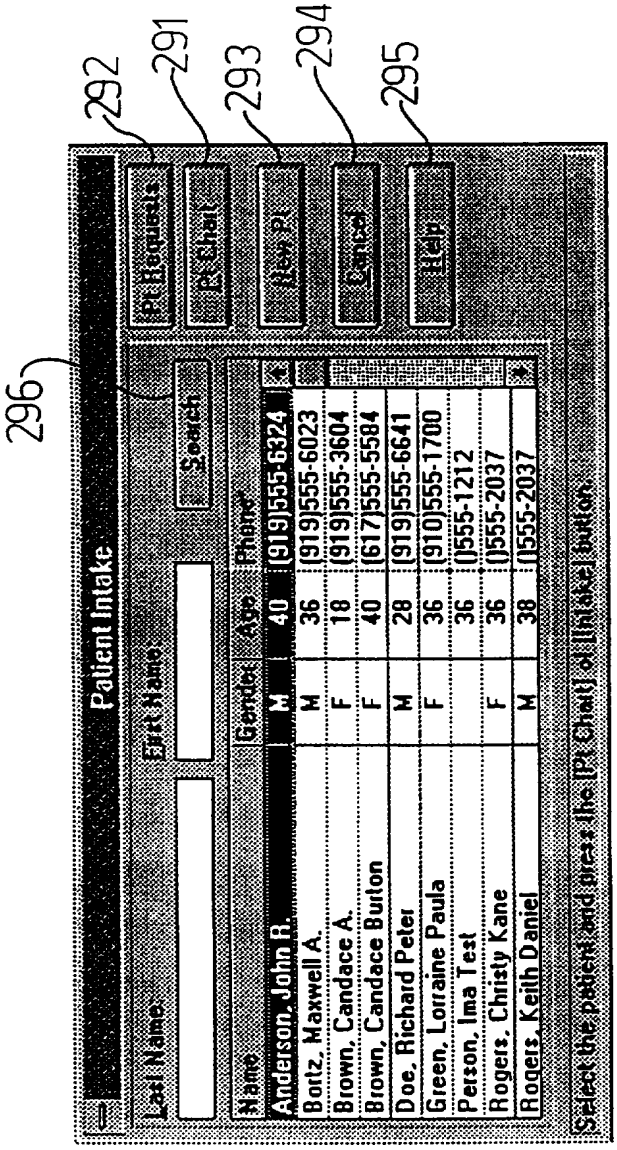

Patient Intake
Last Name:
First Name:
Search
Pt Requests
Pt Chart
New Pt
Cancel
Help
Name
Gender
Age
Phone
Anderson, John B.
M
40
(919)555-6324
Bortz, Maxwell A.
M
36
(919)555-6023
Brown, Candace A.
F
18
(919)555-3604
Brown, Candace Burton
F
40
(617)555-5584
Doe, Richard Peter
M
28
(919)555-6641
Green, Lorraine Paula
F
36
(910)555-1700
Person, Ima Test
36
()555-1212
Rogers, Christy Kane
F
36
()555-2037
Rogers, Keith Daniel
M
38
()555-2037
Select the patient and press the [Pt Chart] or [Intake] button.
291
292
293
294
295
296

FIGURE 5U

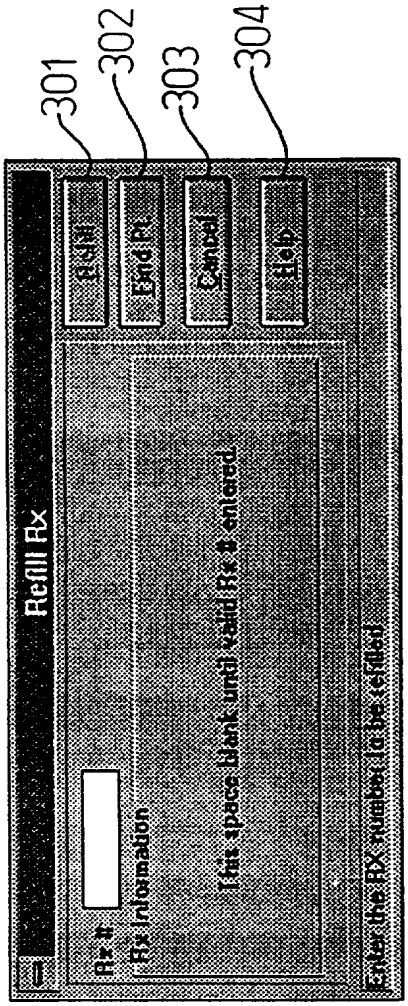

301
302
303
304
Refill Rx
Run
End Pt
Cancel
Help
Rx #
Rx Information
This space blank until valid Rx # entered
Enter the RX number to be refilled

FIGURE 5V

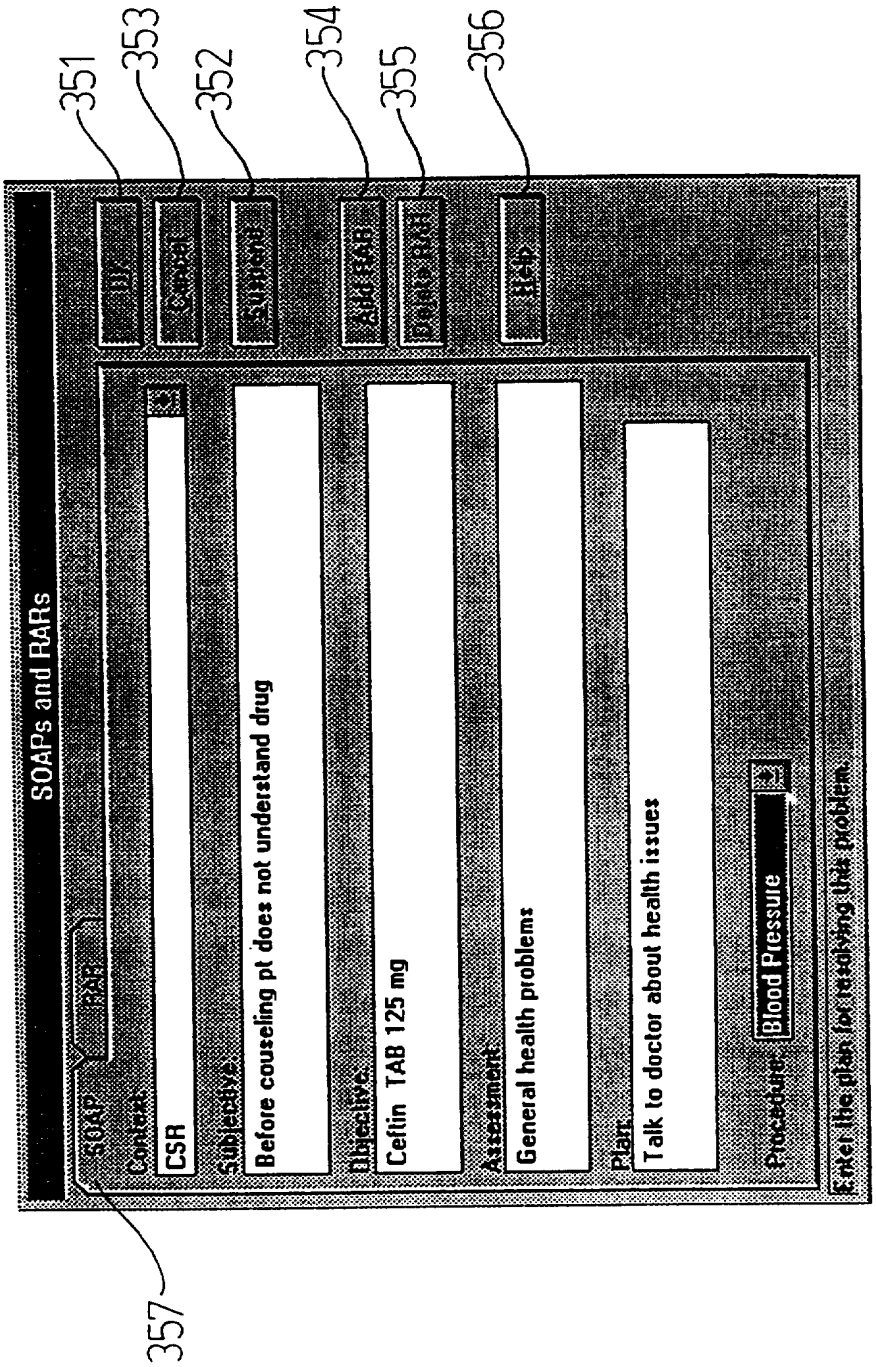

SOAPs and RARs
SOAP
RAR
Context:
CSR
Subjective:
Before couseling pt does not understand drug
Objective:
Ceftin TAB 125 mg
Assessment:
General health problems
Plan:
Talk to doctor about health issues
Procedure:
Blood Pressure
Enter the plan for resolving this problem.
Dx
Cancel
Evidence
Add RAR
Delete RAR
Help
351
353
352
354
355
356
357

FIGURE 5W

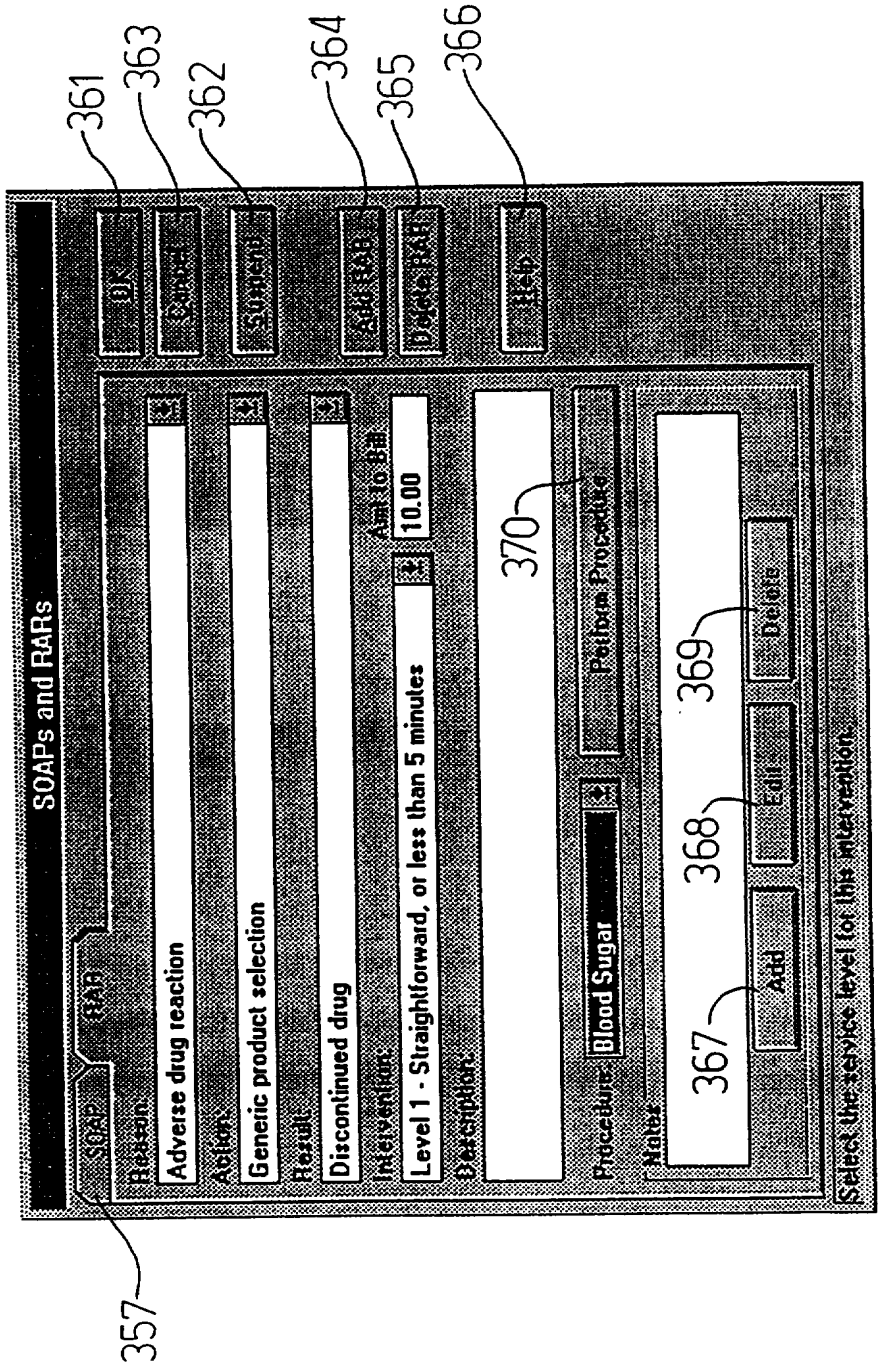

SOAPs and RARs
SOAP
RAR
Reason:
Adverse drug reaction
Action:
Generic product selection
Result:
Discontinued drug
Intervention:
Level 1 - Straightforward, or less than 5 minutes
Amt to Bill
10.00
Description:
Procedure:
Blood Sugar
Notes:
Add
Edit
Delete
OK
Cancel
Sources
Add RAR
Delete RAR
Help
Select the service level for this intervention.
357
361
363
362
364
365
366
370
367
368
369

FIGURE 5X

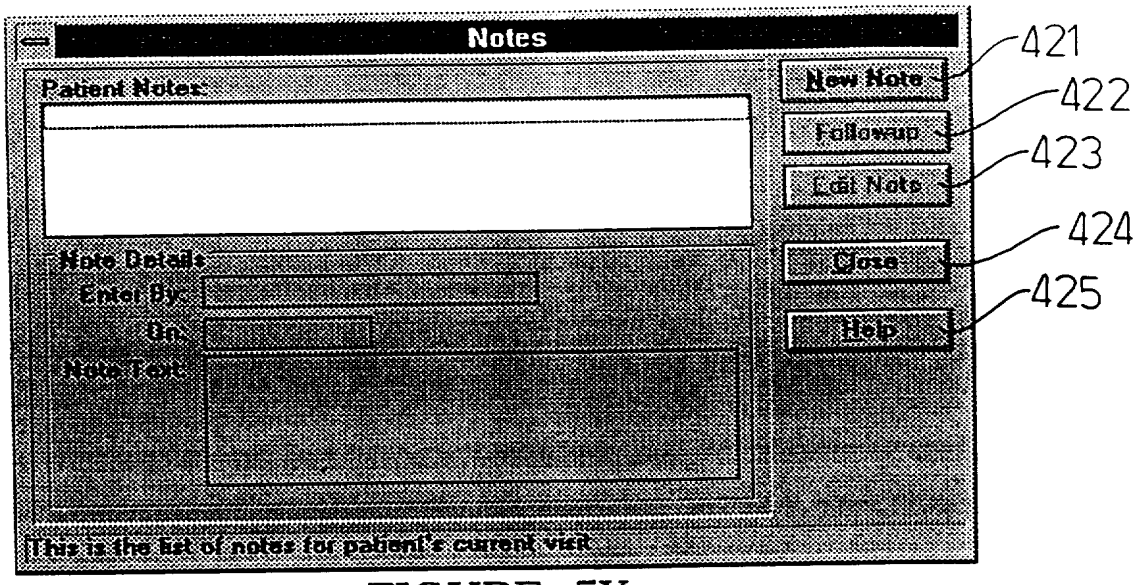


FIGURE 5Y

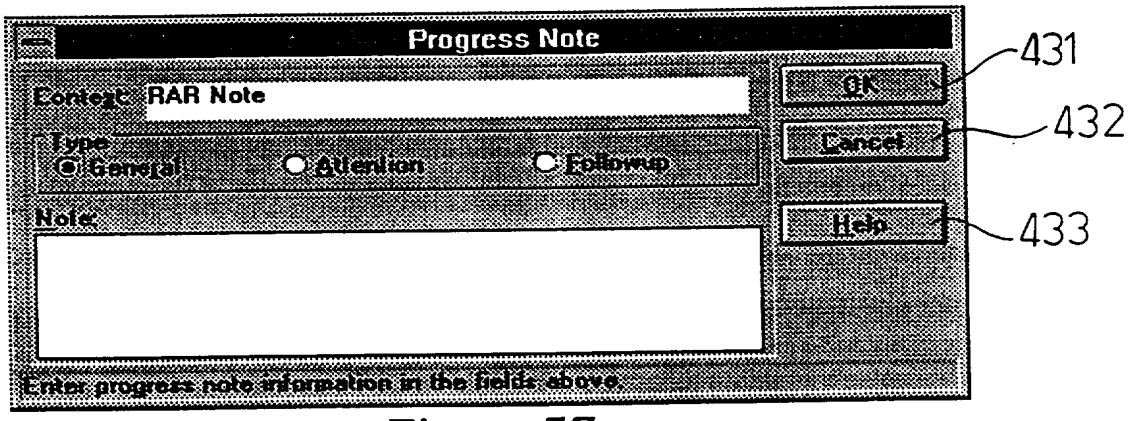


Figure 5Z

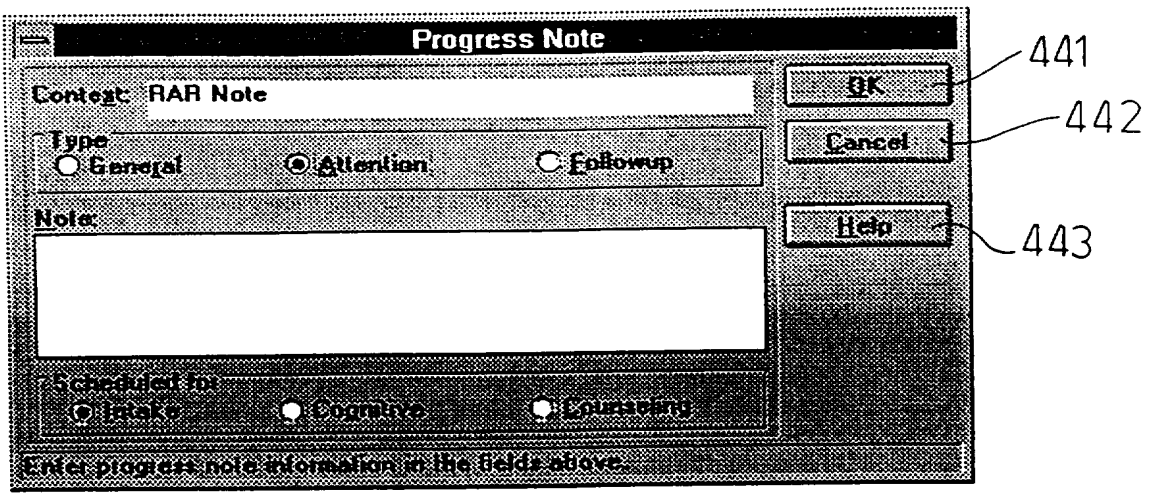


FIGURE 5AA

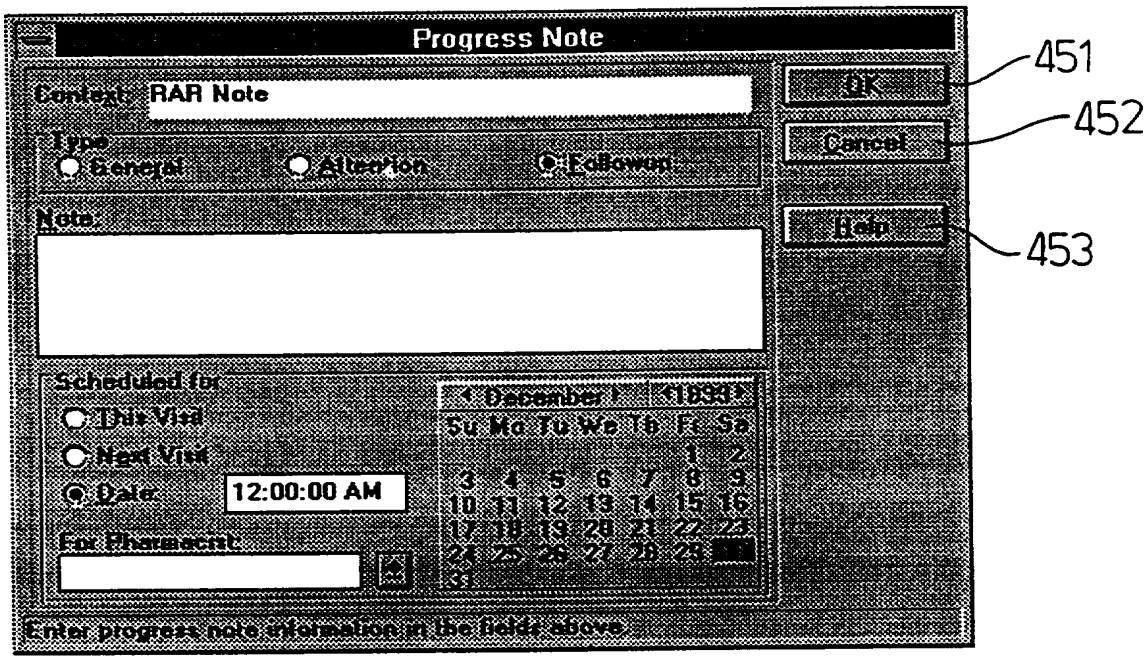


FIGURE 5BB

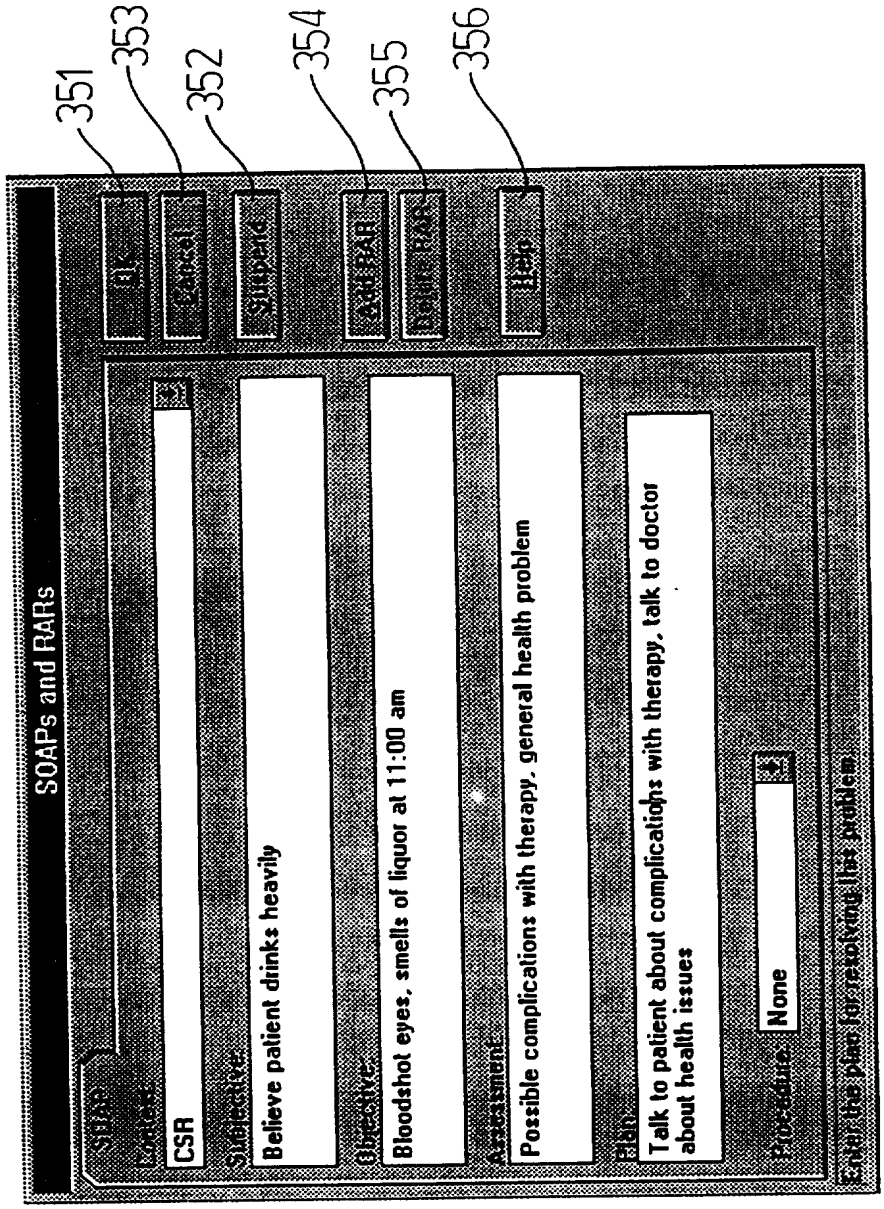

351
353
352
354
355
356
SOAPs and RARs
SOAP
Ok
Cancel
Suggest
SOAP RAR
RARE RAR
Help
Subjective:
CSR
Believe patient drinks heavily
Objective:
Bloodshot eyes, smells of liquor at 11:00 am
Assessment:
Possible complications with therapy, general health problem
Plan:
Talk to patient about complications with therapy, talk to doctor about health issues
Procedure:
None
Enter the plan for resolving the problem.

FIGURE 5CC

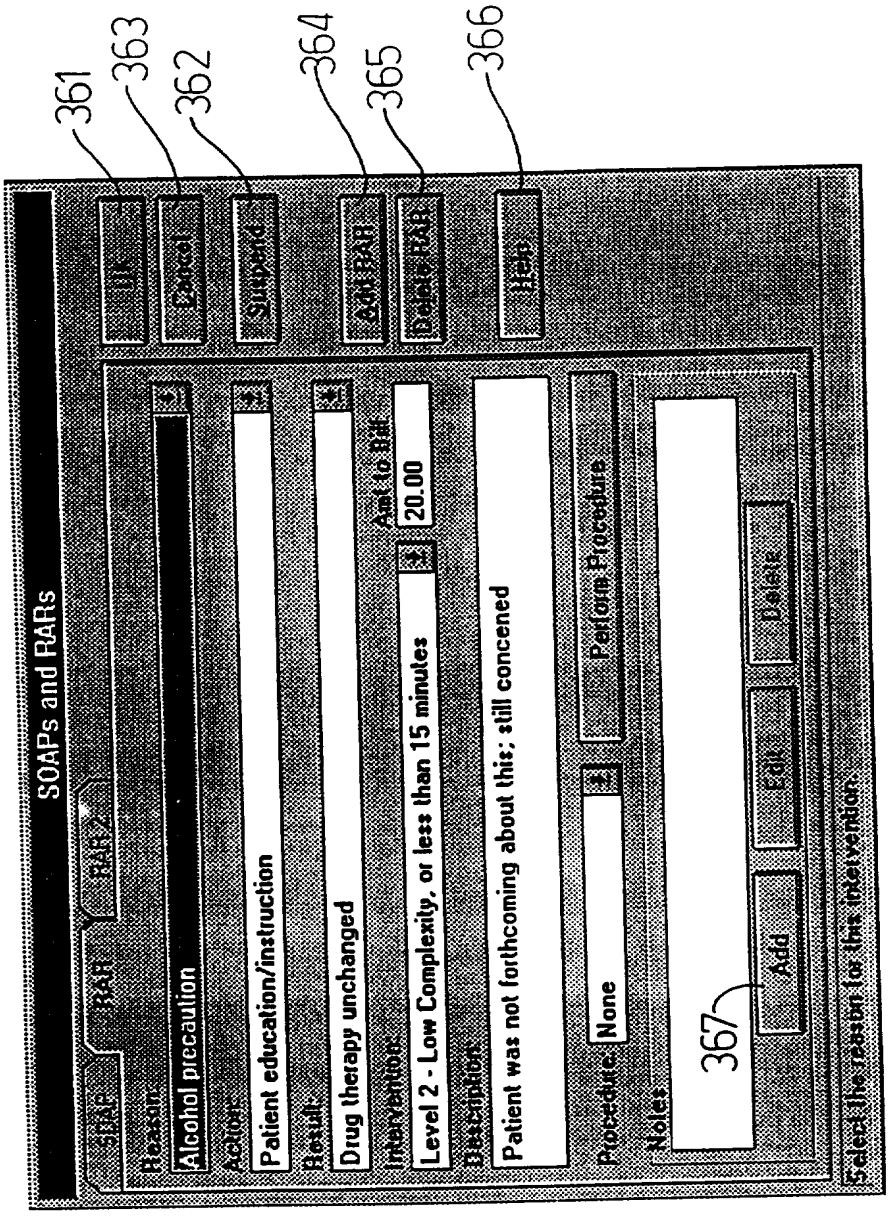

SOAPs and RARs
SOAP
RAR
RAR 2
Reason:
Alcohol precaution
Action:
Patient education/instruction
Result:
Drug therapy unchanged
Intervention:
Level 2 - Low Complexity, or less than 15 minutes
Description:
Patient was not forthcoming about this; still concened
Procedure:
None
Notes:
Add
Edit
Delete
Perform Procedure
Ant to Bill
20.00
OK
Cancel
Suspend
Add RAR
Delete RAR
Help
Select the reason for this intervention.
361
363
362
364
365
366
367

FIGURE 5DD

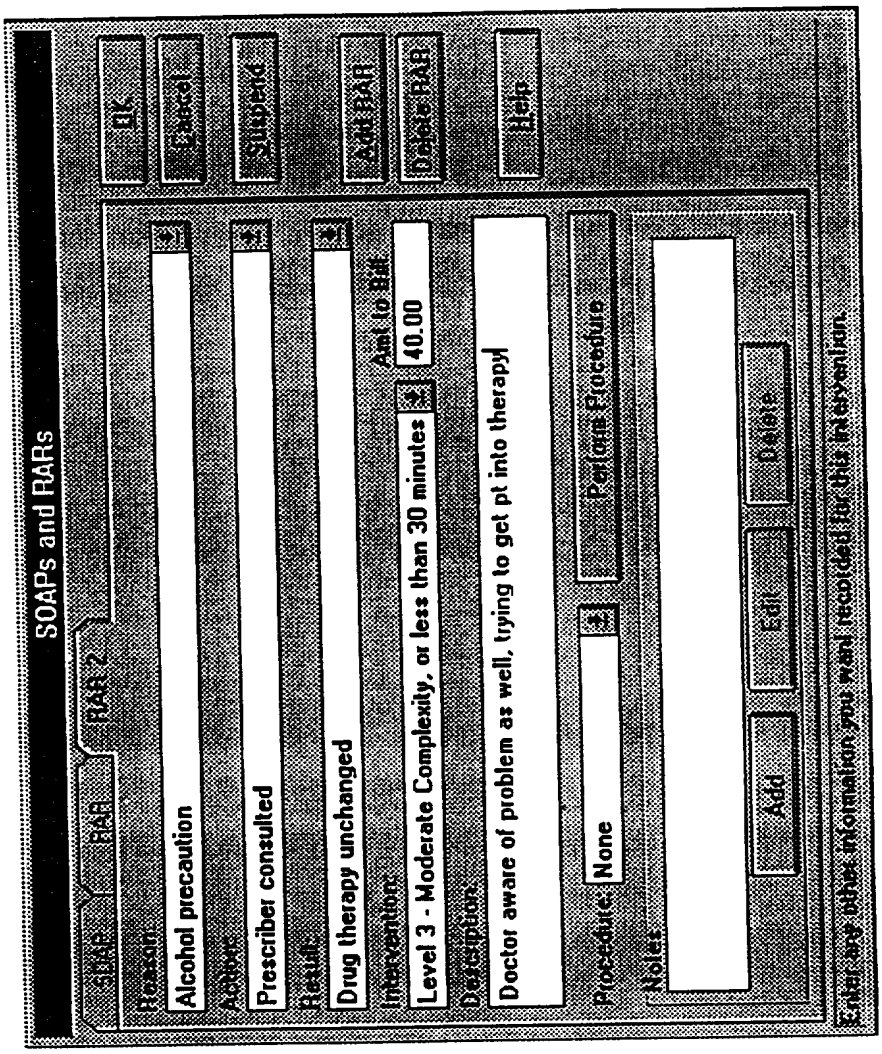

SOAPs and RARs
SOAP
RAR
RAR 2
Reason:
Alcohol precaution
Action:
Prescriber consulted
Result:
Drug therapy unchanged
Intervention:
Level 3 - Moderate Complexity, or less than 30 minutes
Amt to Bill:
40.00
Description:
Doctor aware of problem as well, trying to get pt into therapy
Procedure:
None
Perform Procedure
Notes:
Add
Edit
Delete
Enter any other information you want recorded for this intervention.
OK
Cancel
Skipped
Add RAR
Delete RAR
Help

FIGURE 5EE

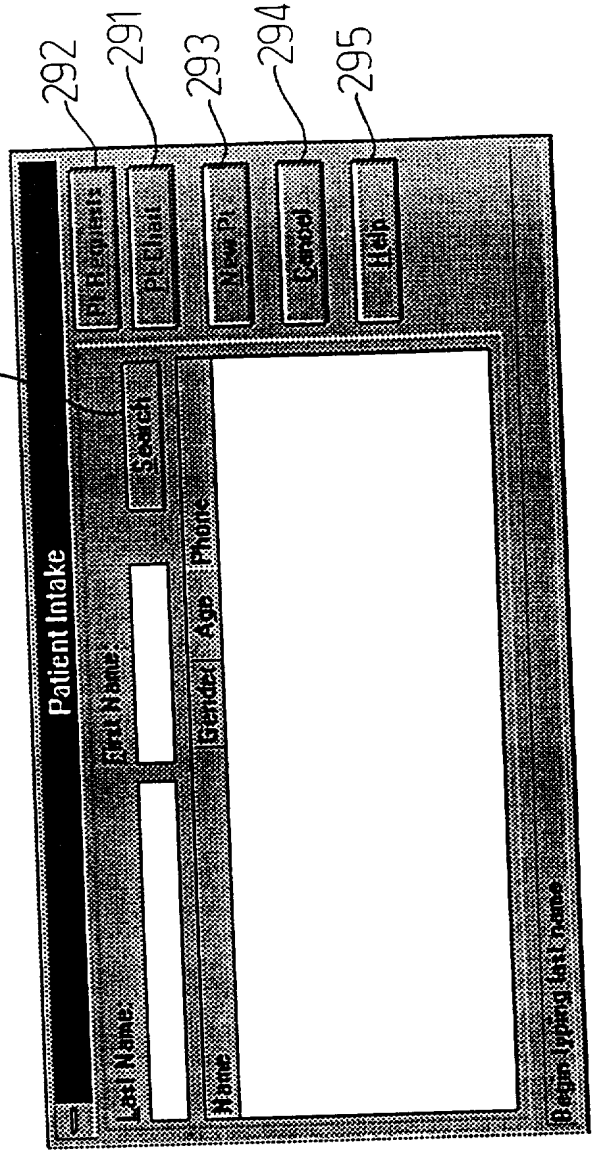

292
291
293
294
295
296
Pt Registers
Pt Chart
New Pt
Cancel
Help
Search
Patient Intake
First Name:
Last Name:
Gender
Age
Phone
Home
Begin typing last name

FIGURE 5FF

FIGURE 5GG

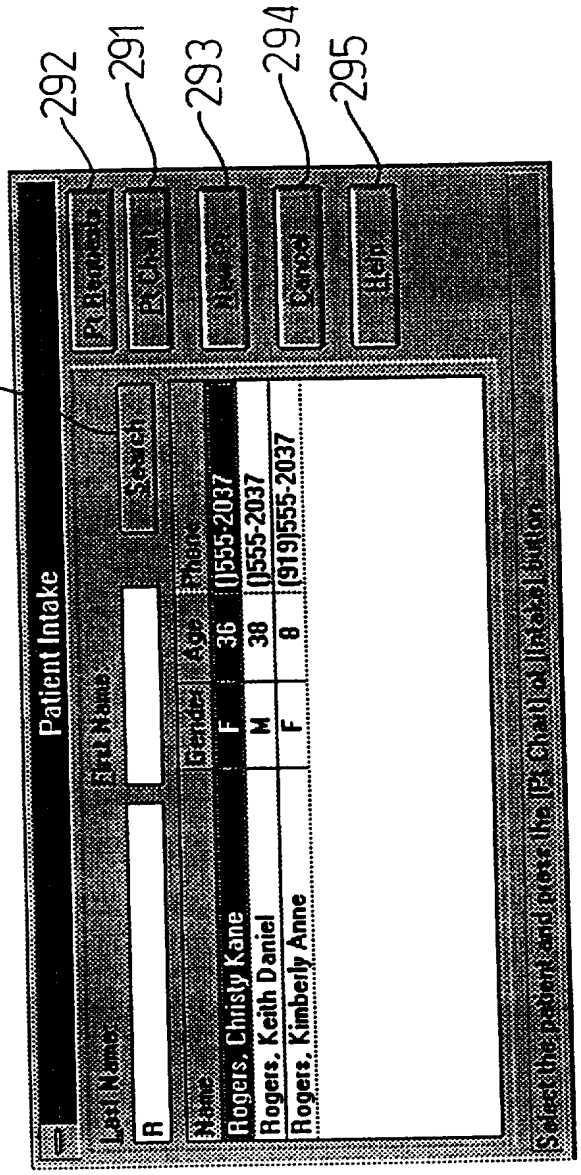
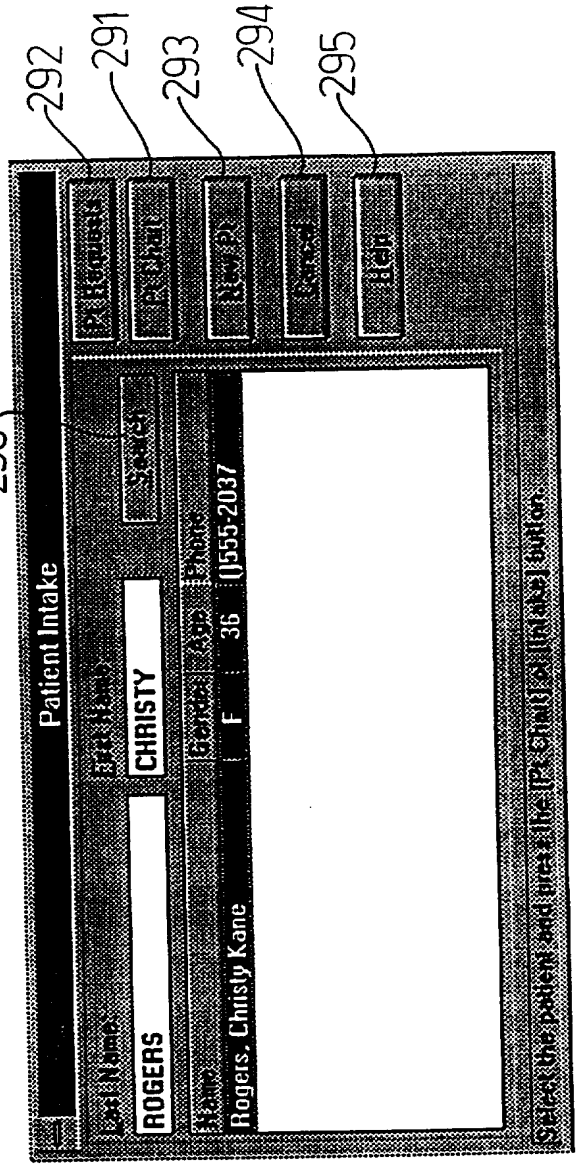

292
291
293
294
295
296
Patient Intake
Last Name:
R
Search
Name
Gender
Age
Phone
Rogers, Christy Kane
F
36
(555-2037
Rogers, Keith Daniel
M
38
(555-2037
Rogers, Kimberly Anne
F
8
(919)555-2037
Select the patient and press the Print Intake Button

FIGURE 5HH


292
291
293
294
295
296
Patient Intake
Last Name:
ROGERS
CHRISTY
Search
Name
Rogers, Christy Kane
Gender
F
Age
36
Phone
(555-2037
Select the patient and press the [Print] or [Intake] button.

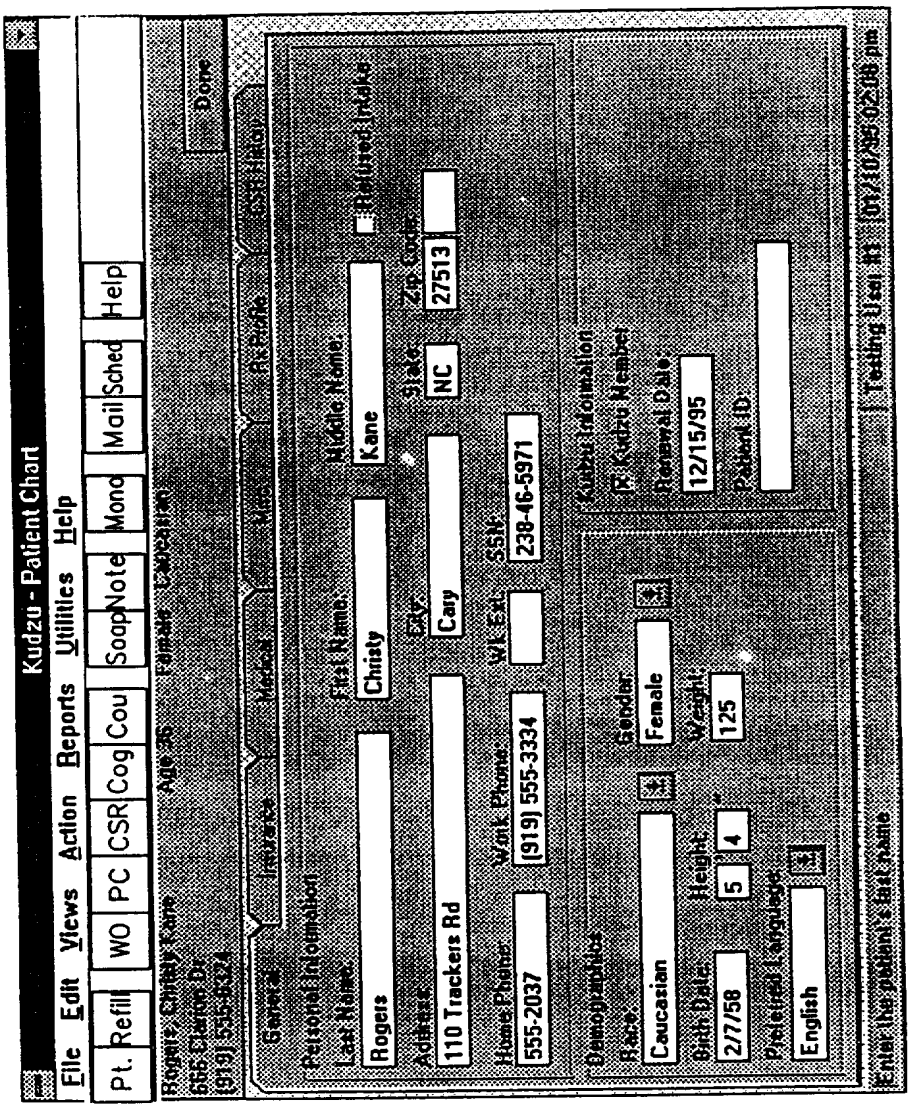

Kudzu - Patient Chart
File Edit Views Action Reports Utilities Help
Pt. Refill WO PC CSR Cog Cou Soap Note Mond Mail Sched Help
Rogers, Christy Kane
666 Clarion Dr
(919) 555-8324
Age 35 Female Caucasian
Done
General Issues Meds Rx Profile Cost History
Personal Information
Last Name:
Rogers
First Name:
Christy
Middle Name:
Kane
Returned Mail
Address:
110 Trackers Rd
City:
Cary
State:
NC
Zip Code:
27513
Home Phone:
555-2037
Work Phone:
(919) 555-3334
Wk Ext:
SSN:
238-46-5971
Demographics
Race:
Caucasian
Gender:
Female
Height:
5 4
Weight:
125
Birth Date:
2/7/58
Preferred Language:
English
Kudzu Information
F Kudzu Member
Renewal Date:
12/15/95
Patient ID:
Enter the patient's last name
Testing User #1 07/10/95 02:08 pm

FIGURE 5II

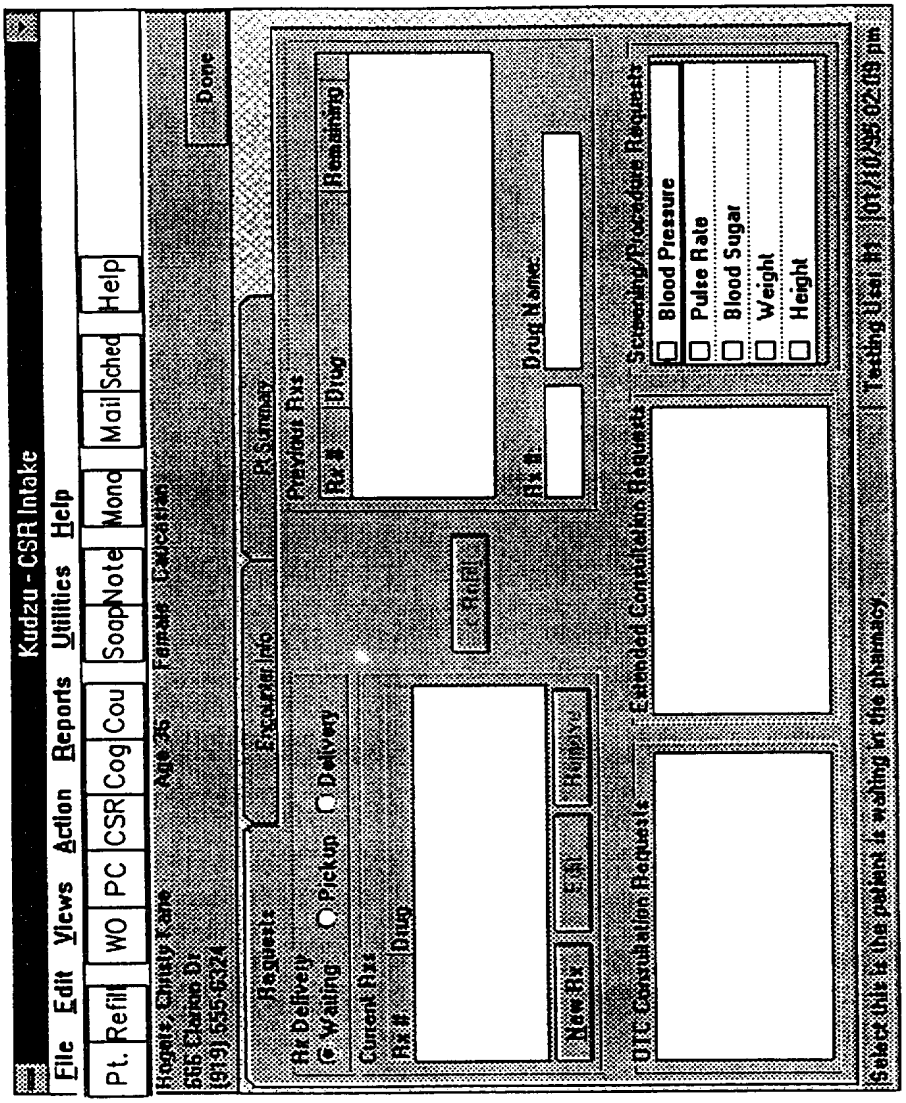

Kudzu - CSR Intake
File Edit Views Action Reports Utilities Help
Pt. Refill WO PC CSR Cog Cou SoapNote Mono Mail Sched Help
Done
Rx Delivery
Waiting
Pickup
Delivery
Current Rx
Rx #
Drug
New Rx
Edit
Refill
Requests
Prescriber Info
P.Summary
Previous Rx
Rx #
Drug
Remaining
Drug Name:
Rx #
OTC Consultation Requests
Extended Consultation Requests
Screening Procedure Requests
Blood Pressure
Pulse Rate
Blood Sugar
Weight
Height

FIGURE 5JJ

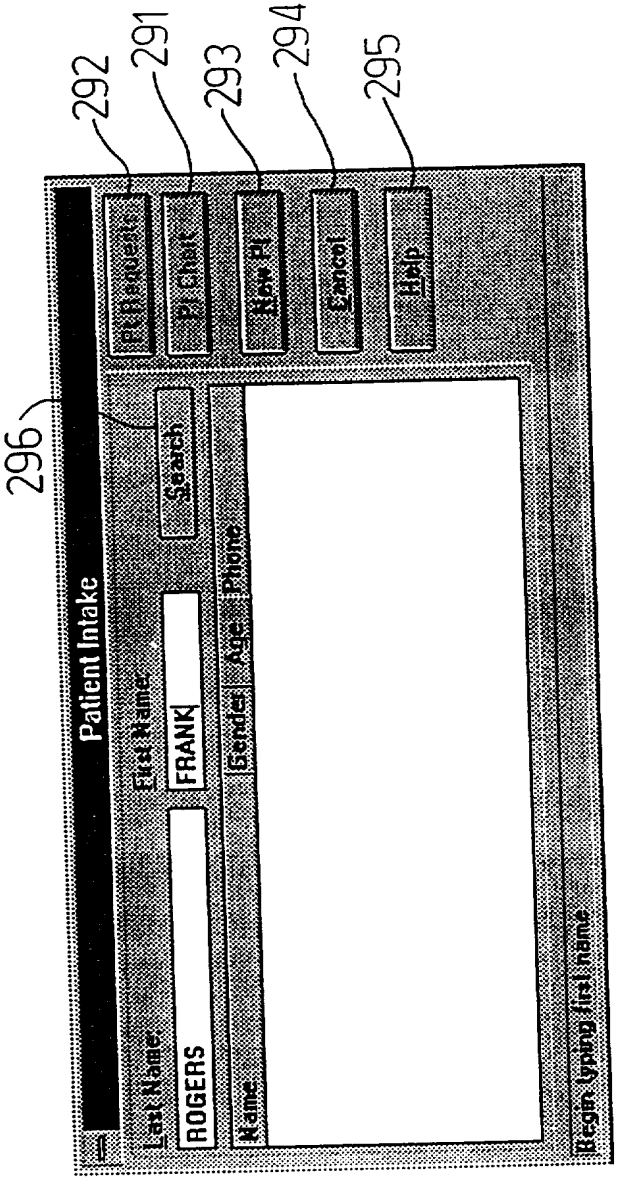

292
291
293
294
295
296
Pt Recvd
Pt Chart
New Pt
Cancel
Help
Search
Patient Intake
First Name
FRANK
Last Name
ROGERS
Gender
Age
Phone
Name
Begin typing first name

FIGURE 5KK

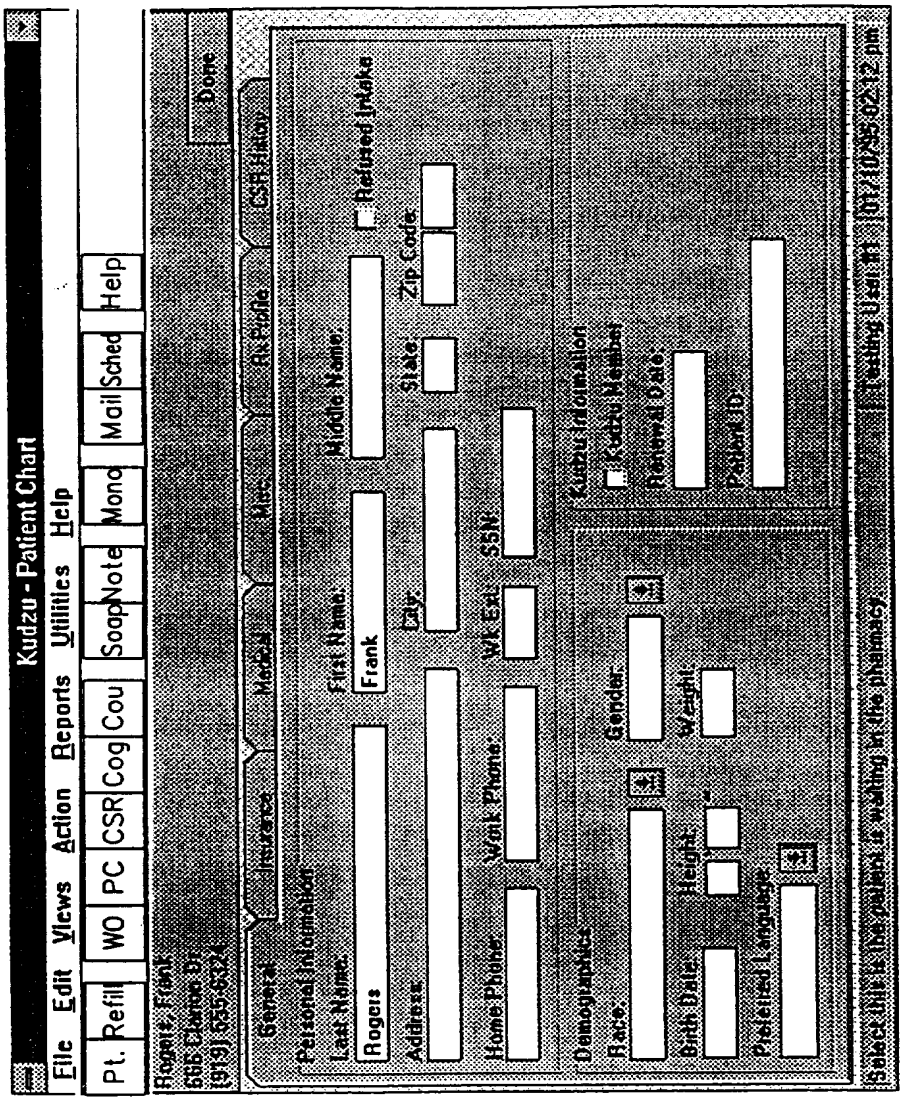

Kudzu - Patient Chart
File Edit Views Action Reports Utilities Help
Pt. Refill WO PC CSR Cog Cou Soap Note Mono Mail Sched Help
Rogers, Frank
666 Clarke Dr
(919) 555-6324
Done
General
Insurance
Medical
Misc.
Rx Profile
CSR Notes
Personal Information
Last Name:
Rogers
First Name:
Frank
Middle Name:
Refused Intake
Address:
City:
State
Zip Code:
Home Phone:
Work Phone:
Wk Ext:
SSN:
Demographics
Race:
Gender:
Kudzu Information
Kudzu Member
Renewal Date:
Birth Date:
Height:
Weight:
Preferred Language:
Patient ID:
Select UNITS Department to work in the pharmacy
Testing User #1
07/10/95 02:12 pm

FIGURE 5LL

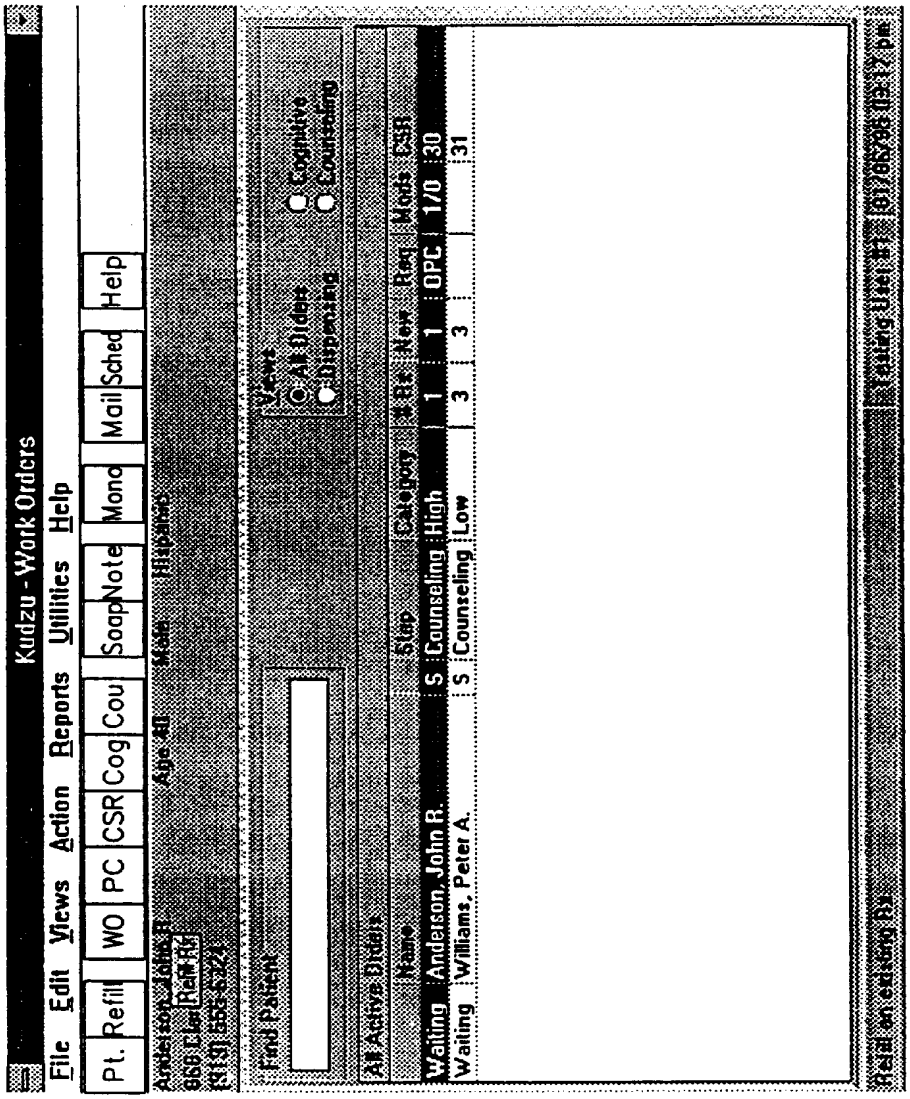

Kudzu - Work Orders
File Edit Views Action Reports Utilities Help
Pt. Refill WO PC CSR Cog Cou SoapNote Mond Mail Sched Help
Anderson, John R.
Age: 41
Male
Hispanic
Find Patient
Views:
All Orders
Dispensing
Cognitive
Counseling
All Active Orders
Name
Step
Category
Hrs
Now
Req
Mods
CSR
Waiting Anderson, John R.
S
Counseling
High
1
1
1
OPC
1/0
30
Waiting Williams, Peter A.
S
Counseling
Low
3
3
31

FIGURE 5MM

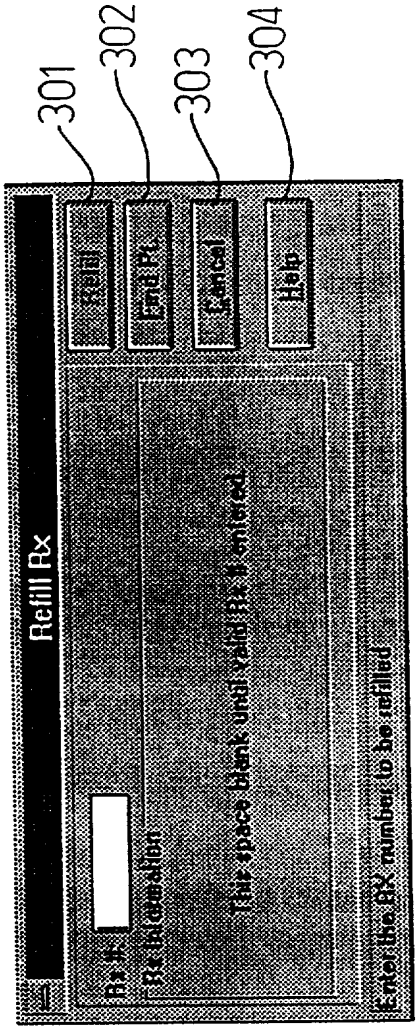

301
302
303
304
Refill
End Pt
Cancel
Help
Refill Rx
Rx #:
Rx Information
This space blank until valid Rx # entered.
Enter the Rx number to be refilled

FIGURE 5NN

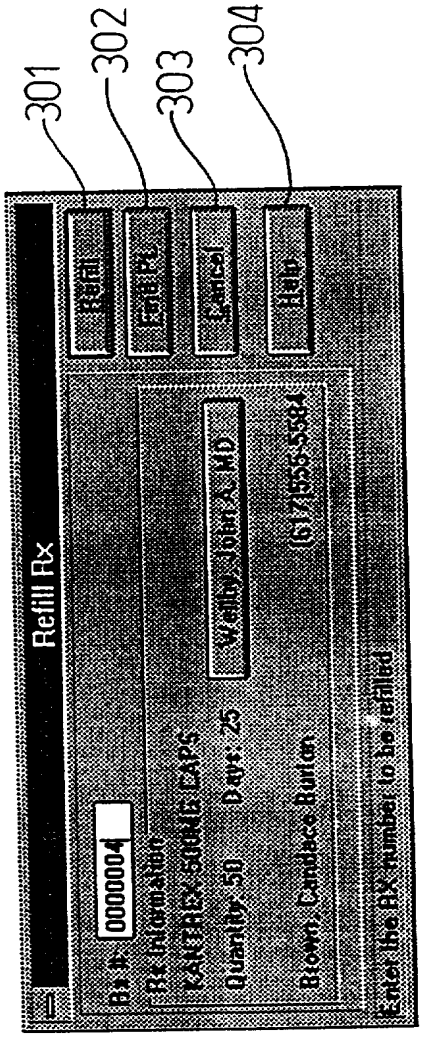

301
302
303
304
Refill Rx
Refill
Enter Rx
Cancel
Help
Rx #: 0000004
Rx Information
KANTREX 500MG CAPS
Quantity: 50
Days: 25
Welby, John A. MD
(617)555-5584
Brown, Candace Burton
Enter the Rx number to be refilled

FIGURE 500

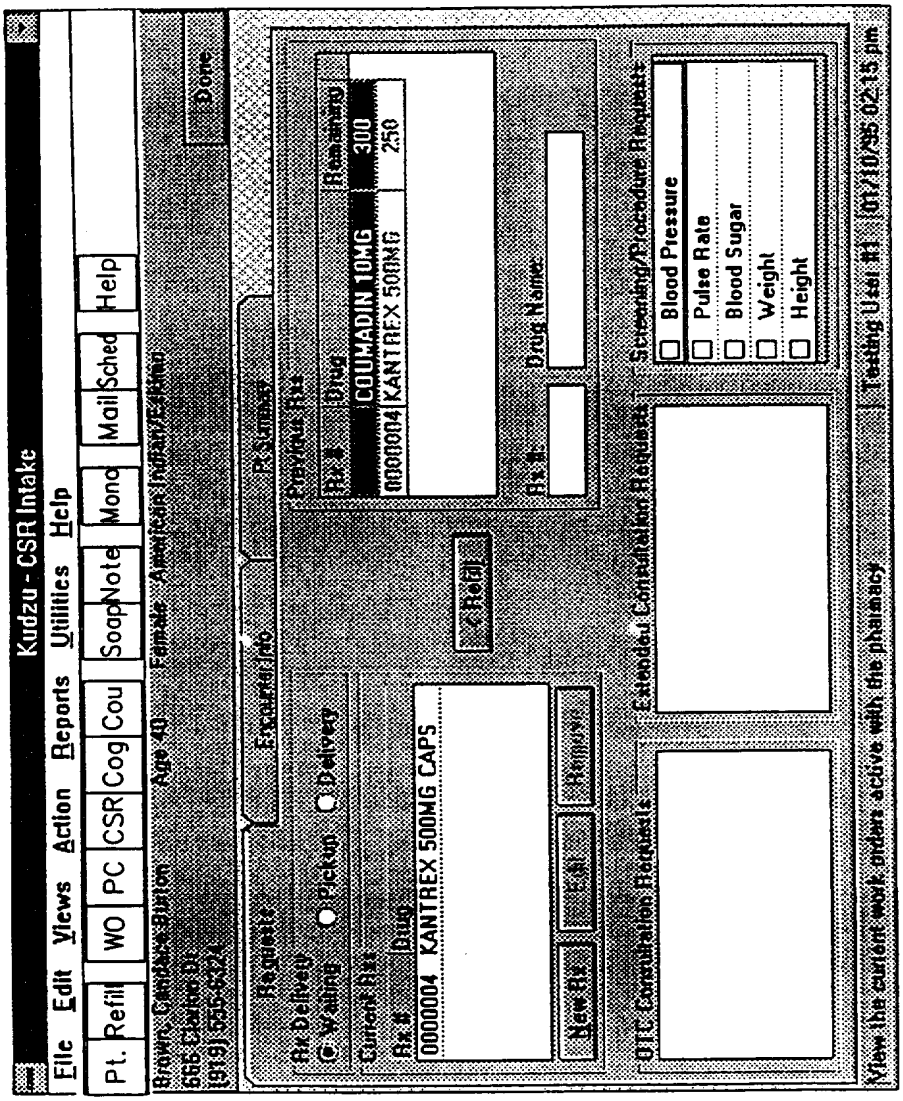

Kudzu - CSR Intake
File Edit Views Action Reports Utilities Help
Pt. Refill WO PC CSR Cog Cou Soap Note Mond Mail Sched Help
Brown, Candace Burton Age 40 Female American Indian/Z-Race
665 Clover Dr
(918) 555-9324
Done
Requests
Rx Delivery
Waiting
Pickup
Delivery
Current Rx
Rx # Drug
0000004 KANTREX 500MG CAPS
New Rx
Edit
Remove
Refill
Rx Info
Rx Summary
Previous Rx
Rx # Drug Remaining
0000004 KANTREX 500MG 250
0000014 COUMADIN 10MG 300
Rx #
Drug Name:
Extended Consultation Requests
UIC Consultation Requests
Screening/Procedure Requests
Blood Pressure
Pulse Rate
Blood Sugar
Weight
Height
View the current work orders active with the pharmacy
Testing User #1 01/10/95 02:15 pm

FIGURE 5PP

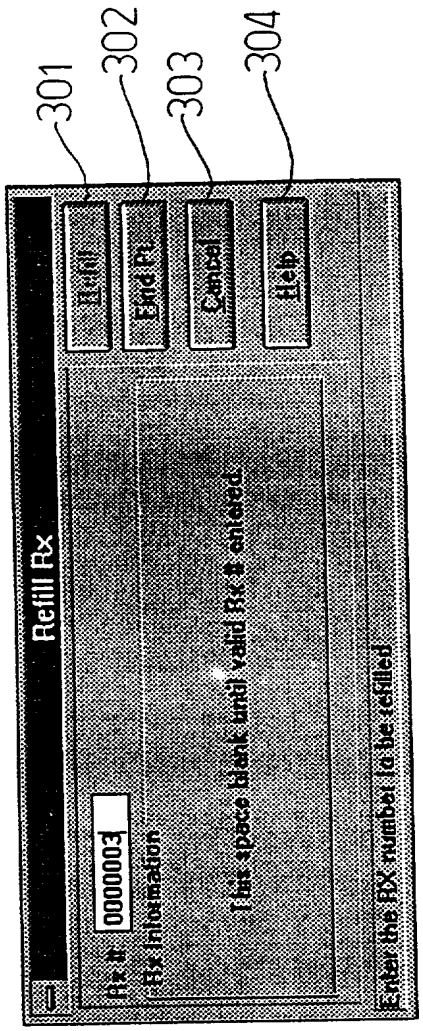

301
302
303
304
Refill
End Rx
Cancel
Help
Refill Rx
Rx #: 0000003
Rx Information
This space blank until valid Rx # entered
Enter the Rx number to be refilled

FIGURE 5QQ

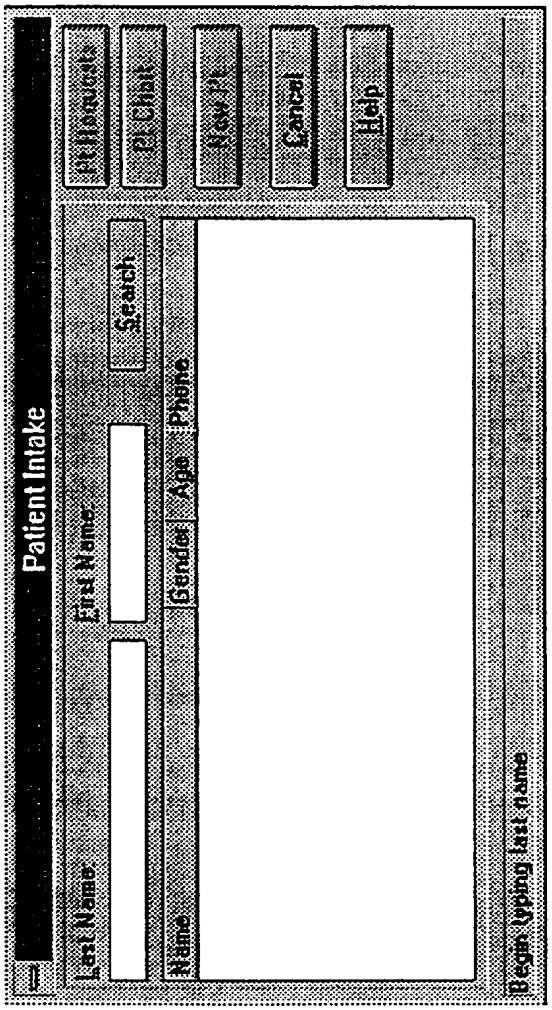

Patient Intake
Pt Financials
Pt Chart
New Pt
Cancel
Help
Search
First Name
Last Name
Name
Gender
Age
Phone
Begin typing last name

FIGURE 5RR

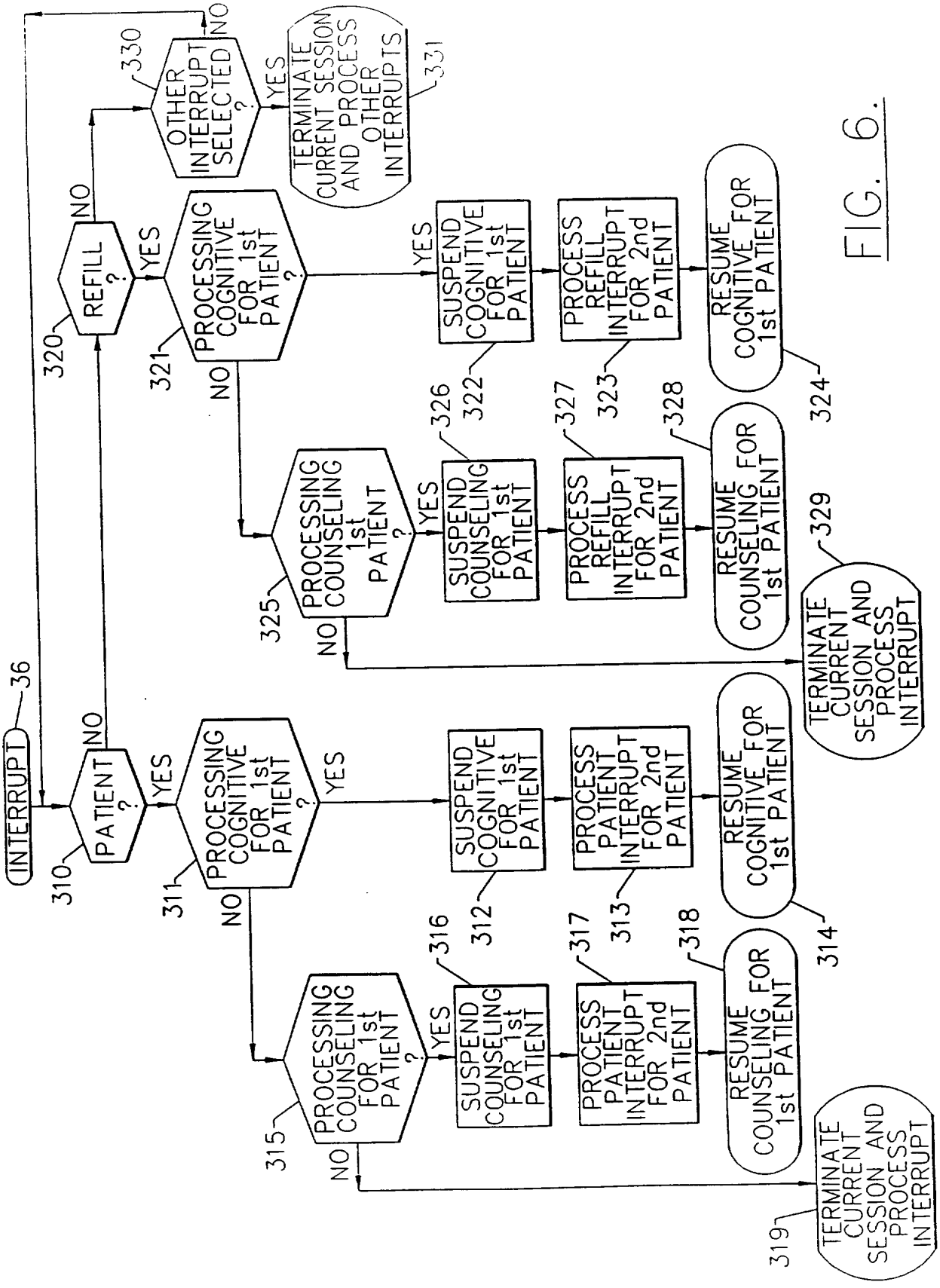

INTERRUPT
36
PATIENT ?
310
NO
YES
PROCESSING COGNITIVE FOR 1st PATIENT ?
311
YES
NO
SUSPEND COGNITIVE FOR 1st PATIENT
312
PROCESS PATIENT INTERRUPT FOR 2nd PATIENT
313
RESUME COGNITIVE FOR 1st PATIENT
314
PROCESSING COUNSELING FOR 1st PATIENT ?
315
YES
NO
SUSPEND COUNSELING FOR 1st PATIENT
316
PROCESS PATIENT INTERRUPT FOR 2nd PATIENT
317
RESUME COUNSELING FOR 1st PATIENT
318
TERMINATE CURRENT SESSION AND PROCESS INTERRUPT
319
REFILL ?
320
NO
YES
PROCESSING COGNITIVE FOR 1st PATIENT ?
321
YES
NO
SUSPEND COGNITIVE FOR 1st PATIENT
322
PROCESS REFILL INTERRUPT FOR 2nd PATIENT
323
RESUME COGNITIVE FOR 1st PATIENT
324
PROCESSING COUNSELING 1st PATIENT ?
325
YES
NO
SUSPEND COUNSELING FOR 1st PATIENT
326
PROCESS REFILL INTERRUPT FOR 2nd PATIENT
327
RESUME COUNSELING FOR 1st PATIENT
328
TERMINATE CURRENT SESSION AND PROCESS INTERRUPT
329
OTHER INTERRUPT SELECTED ?
330
NO
YES
TERMINATE CURRENT SESSION AND PROCESS OTHER INTERRUPTS
331

FIG. 6.

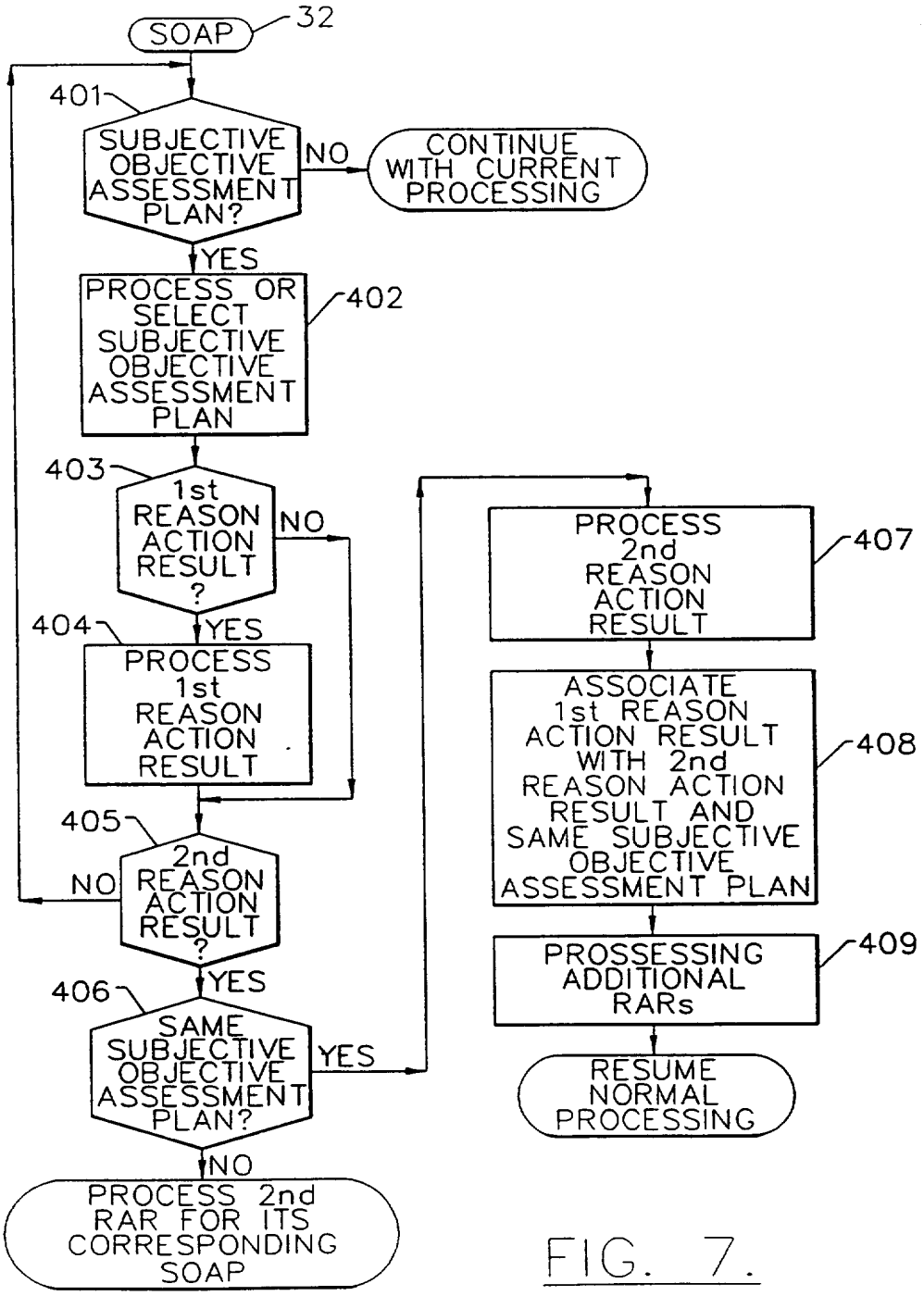

SOAP
32
401
SUBJECTIVE OBJECTIVE ASSESSMENT PLAN?
NO
CONTINUE WITH CURRENT PROCESSING
YES
PROCESS OR SELECT SUBJECTIVE OBJECTIVE ASSESSMENT PLAN
402
403
1st REASON ACTION RESULT ?
NO
YES
404
PROCESS 1st REASON ACTION RESULT
405
2nd REASON ACTION RESULT ?
NO
YES
406
SAME SUBJECTIVE OBJECTIVE ASSESSMENT PLAN?
YES
NO
PROCESS 2nd RAR FOR ITS CORRESPONDING SOAP
PROCESS 2nd REASON ACTION RESULT
407
ASSOCIATE 1st REASON ACTION RESULT WITH 2nd REASON ACTION RESULT AND SAME SUBJECTIVE OBJECTIVE ASSESSMENT PLAN
408
PROSSESSING ADDITIONAL RARs
409
RESUME NORMAL PROCESSING

FIG. 7.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US96/00604

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) : G06F 159:00
US CL : 364/401
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 364/401, 395/600, 395/149, 395/157

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

APS, DIALOG

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	Pharmaceutical Care Services, Inc., Pharmcare Pharmacist Training Manual, Dana Anderson, Section 9, pp. 1-3.	1-6, 8-22, 24-33
Y	Innovative Practice, American Pharmacy, March 1994, S. Martin, "Pharmaceutical Care Made Easy", pages 61-64	1-6, 8-22, 24-33
Y	US, A, 4,847,764 (HALVORSON) 11 July 1989, col.3, lines 31-34, col. 4, lines 27-31.	7, 23
A	US, A, 5,299,121 (BRILL et al) 29 March, 1994	1-33
A	US, A, 4,546,901 (BUTTARAZZI) 15 October 1985	1-33

[X] Further documents are listed in the continuation of Box C. [ ] See patent family annex.

*	Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A"	document defining the general state of the art which is not considered to be part of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E"	earlier document published on or after the international filing date	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&"	document member of the same patent family
"O"	document referring to an oral disclosure, use, exhibition or other means		
"P"	document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search
08 April 1996

Date of mailing of the international search report
30 APR 1996

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Form PCT/ISA/210 (second sheet)(July 1992)*

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US96/00604

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US, A, 4,839,806 (GOLDFISCHER et al) 13 July 1989	1-33